

NATURAL GAS QUALITY: POWER TURBINE PERFORMANCE DURING HEAT CONTENT SURGES

CONSULTANT REPORT

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ACRONYMS AND TERMS

Acronyms

Btu:	British thermal unit (a unit of heat)
CO:	Carbon Monoxide
CT:	Combustion Turbine
DLN:	Dry Lo-NOx (A turbine combustor design that controls NOx emissions)
HHV:	Higher heating value
Lbs/hr:	pounds per hour
LMEC:	Los Medanos Energy Center
MMBtu/hr:	Million Btus per hour
NOx:	Nitrogen Oxides
PG&E:	Pacific Gas & Electric Company
Ppm:	parts per million
SCAQMD:	South Coast Air Quality Management District
Scf:	standard cubic foot
SCR:	Selective Catalytic Reduction (a NOx control technology)
SoCalGas:	Southern California Gas Company
SRI:	Southern Research Institute

Terms

- C6 +: Hydrocarbons with six or more carbon molecules.
- Inerts: Non combustible components of natural gas (e.g. nitrogen and carbon dioxide).
- Mole percent: Composition in percent of the total number of molecules for that given component. For gases it is the same as volume percent composition.
- SCONOx: Trademarked name for a NOx/CO control technology. SCONOx, unlike SCR, does not use ammonia and has no ammonia slip emissions.
- Wobbe index: An index of fuel gas interchangeability. It is the higher heating value (Btu/scf) of the gas divided by the square root of the density of the gas (air density = 1)

EXECUTIVE SUMMARY

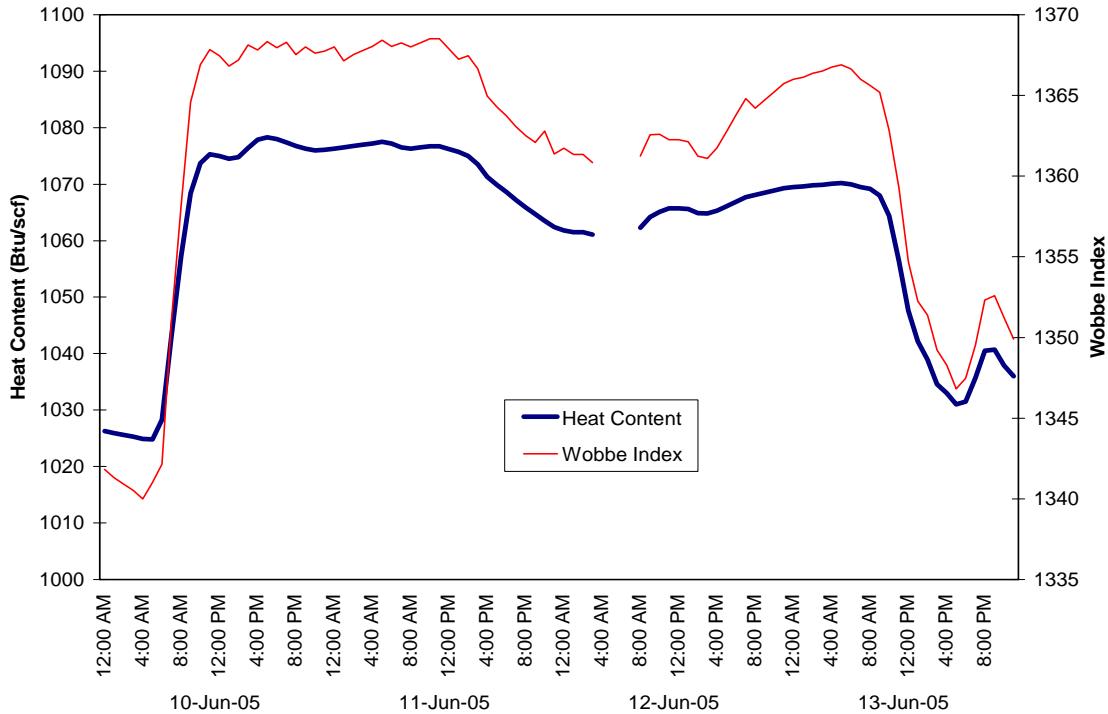
This study reports the testing results on emissions and performance of various electrical generating facilities in commercial operation that burned higher than normal heating value natural gas. During the second week of June 2005, a natural gas liquids extraction plant in Canada failed, which resulted in higher than normal heating value gas to travel south through the Pacific Gas and Electric Company (PG&E) pipeline system. The flow of natural gas occurred for three days, which allowed for testing and data collection to document and analyze the emissions and performance impacts on large gas turbines at the Redding, Sutter, Los Medanos, and Delta facilities.

There is a great deal of interest in the heat content of natural gas, with many studies, tests, and papers completed over the past several years regarding the effects of higher and lower heat content natural gas. Much of this work has been conducted to support efforts to develop natural gas interchangeability regulations/specifications. These efforts have included testing many residential and commercial combustion sources; however, to date little direct data from on-line large gas turbines serving the power industry have been available. This study attempts to provide data to begin filling this gap in empirical knowledge.

Natural Gas Heat Content Excursion

The natural gas in the PG&E pipeline excursion event showed an approximate 5 percent increase in heat content, from approximately 1,025 British thermal unit per standard cubic foot (Btu/scf) to 1,078 Btu/scf, and an approximate 2 percent increase in Wobbe index, from 1340 to 1369. Figure ES-1 shows the heat content data, as measured by PG&E from June 10 through June 13, 2005, in Pittsburg, California.

Figure ES-1: Pipeline Natural Gas Heat Content at Pittsburgh



The heat content excursion varied over time, decreasing from the peak that occurred early in the excursion. The excursion lasted approximately 3.5 days at Pittsburg. The start and end time of the excursion varied based on location as the natural gas traveled from north to south through the pipeline.

A more complete description of the pipeline natural gas and as-used fuel natural gas is provided in Chapter 2.

Gas Turbine Operational Effects

In general, the heat content excursion caused little or no noticeable effect in facility operations or exhaust emissions based on the available data. The only effects that could be shown statistically are minor increases in pre-control system nitrogen oxides (NOx) and NOx control system ammonia use. The post-control system NOx emissions did not show any trend versus fuel heat content or Wobbe index. Using the results from the Sutter Plant as an example, Figure ES-2 shows the Pre-Selective Catalytic Reduction (SCR) NOx (@ actual O₂ levels) versus fuel Wobbe index for Sutter Combustion Turbine 2 (CT2) during high load operation.

Figure ES-2 – Sutter CT2 Pre-SCR NOx Levels versus Wobbe Index

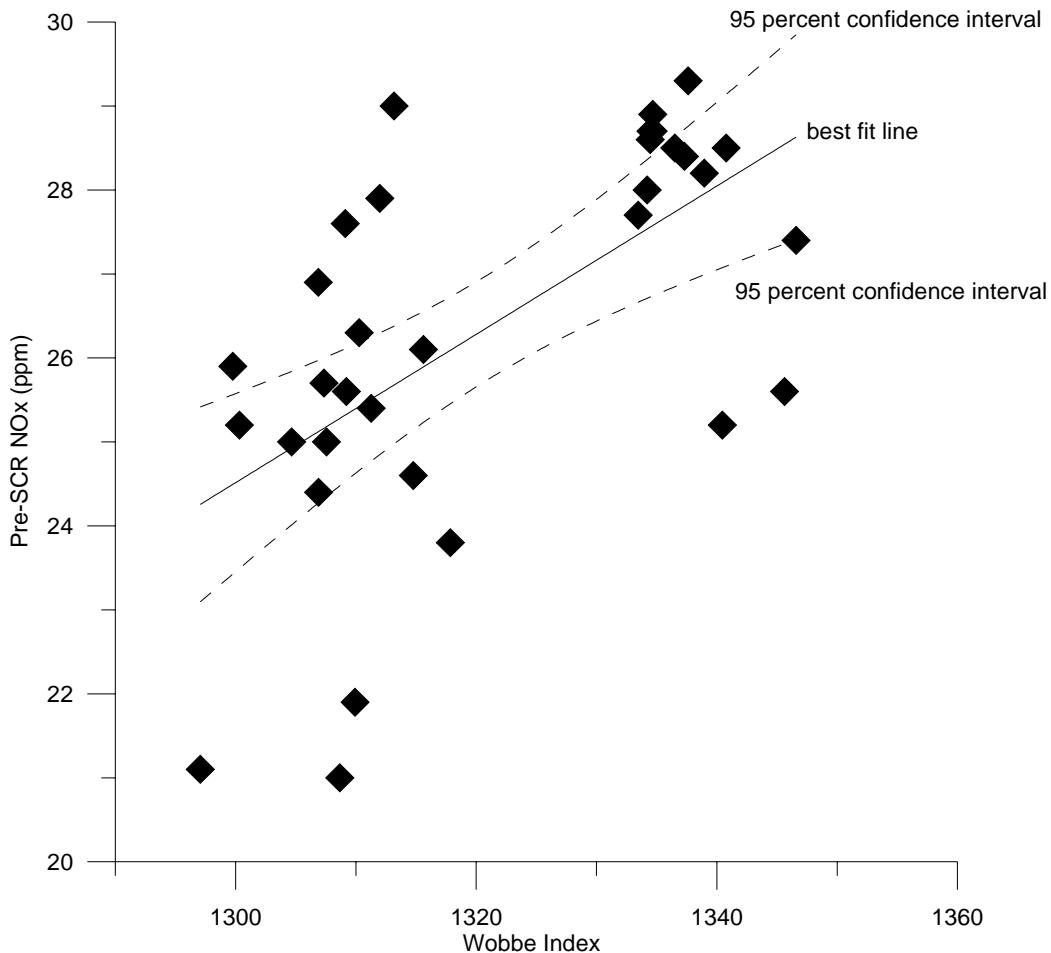
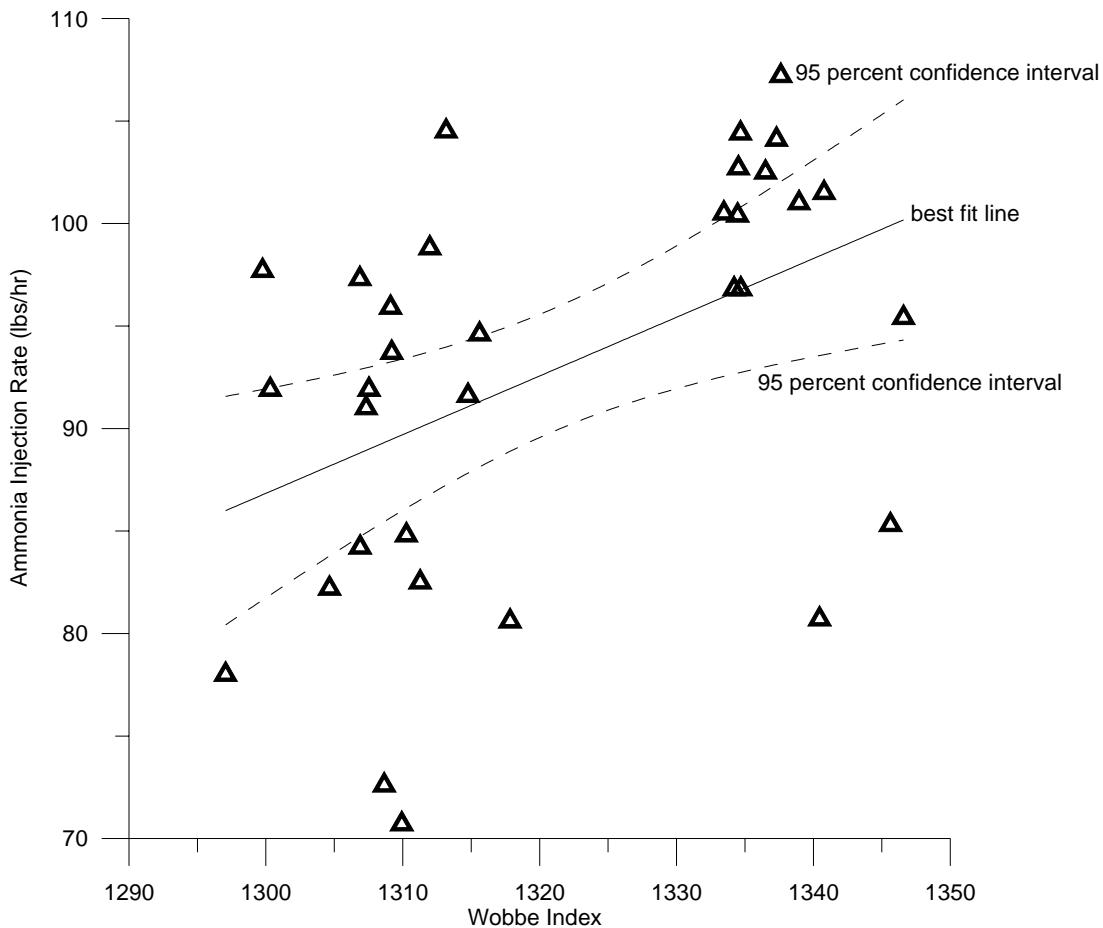


Figure ES-3: Sutter CT2 Ammonia Use versus Wobbe Index



The ammonia consumption rates during the same high turbine load interval for Sutter CT2 are shown in Figure ES-3 with a best linear fit and 95 percent confidence interval for that fit. An approximate 10 percent increase in SCR ammonia use for a 3.5 percent increase in Wobbe index is predicted.

While the Sutter CT2 pre-SCR NOx emission concentrations and ammonia injection rates show a minor increase with increased Wobbe Index at high loads, the post-SCR NOx concentrations do not show any significant increase with Wobbe index. Figure ES-4 shows the post-SCR NOx levels (@15% O₂) for the Sutter CT2 at the same high load interval shown in Figures ES-2 and ES-3.

Figure ES-4: Sutter CT2 Post-SCR NOx versus Wobbe Index

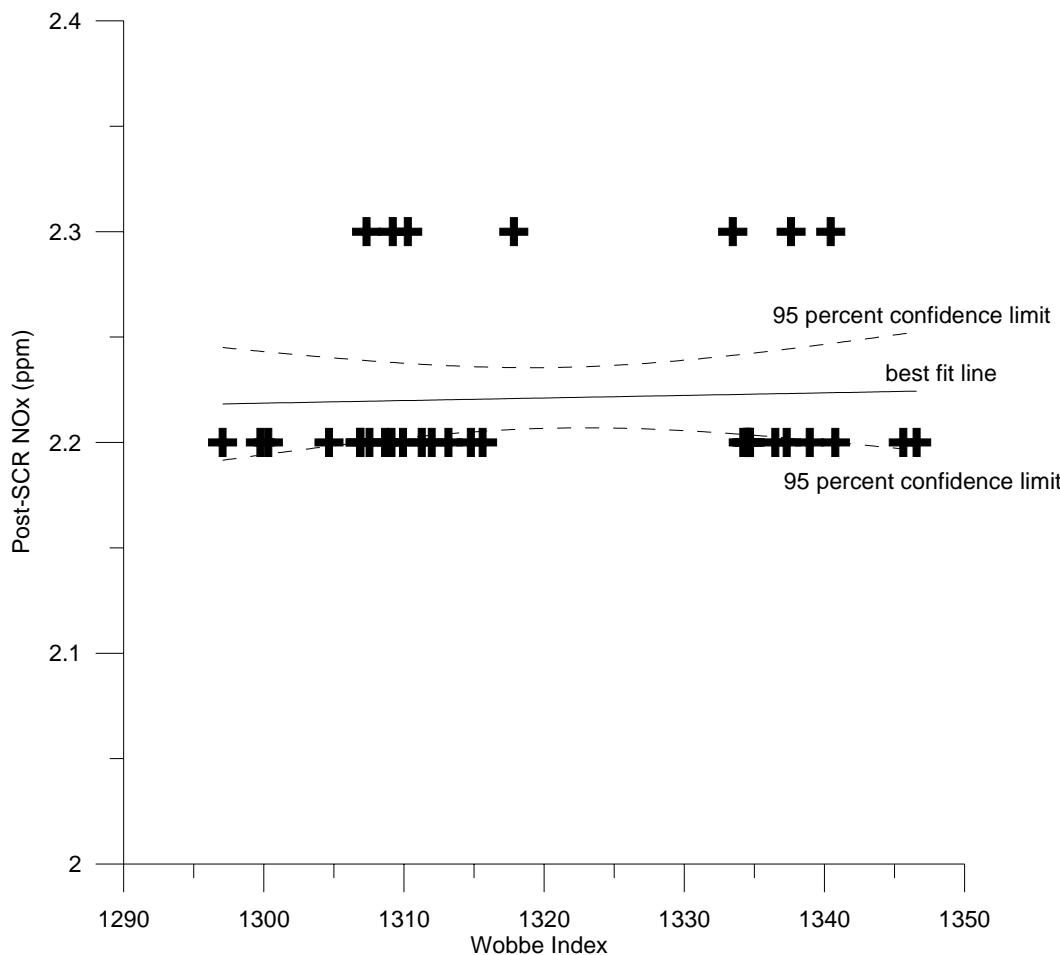


Figure ES-4 includes a best linear fit and a 95 percent confidence interval for that fit. No apparent trend in controlled NOx concentrations at the higher load interval is predicted. Additional data on controlled NOx concentrations for the other facilities are provided in Section 4.

Summary

The increase in heat content/Wobbe index caused a small increase in pre-SCONoX and pre-SCR NOx emissions of the Redding and Sutter facilities, respectively, and an increase in ammonia use, indicating an increase in pre-SCR NOx emissions, at the Delta and Los Medanos facilities.

At no time during normal operations did any of the controlled NOx concentrations at any of the facilities included in this study exceed their air quality permit limits. The NOx control systems for these facilities were able to adjust to counteract the increased turbine NOx emissions.

CHAPTER 1: INTRODUCTION

Event Introduction

In June 2005, Pacific Gas and Electric Company (PG&E) notified the California Energy Commission (Energy Commission) that a slug of high heating value gas, resulting from an outage at a liquids extraction plant in Canada, would be moving through the PG&E system.

An increase in heating value of approximately 6 percent, from about 1,020 to about 1,080 Btu per cubic foot, lasted for approximately 3 days. Customers south of Stockton and San Jose had lower increases in the energy content of their gas.¹

The Energy Commission requested both natural gas testing and gas turbine operating data, including emissions data, from several electric generating plants that used gas from the affected pipeline for several days surrounding this event. The electric generating plants that voluntarily participated include the City of Redding Generating Unit #5 (Redding),² the Sutter Power Plant (Sutter),³ the Los Medanos Energy Center Los Medanos or LMEC),⁴ and the Delta Energy Center (Delta).⁵ The pipeline route and participating facilities are shown on Figure 1-1.

Collected Event Data

The data that were available and collected from each of the power facilities varied due to facility design and data access. A summary of the natural gas and facility operating data provided from each plant is provided in Table 1-1. The collected data are presented in Appendix A.

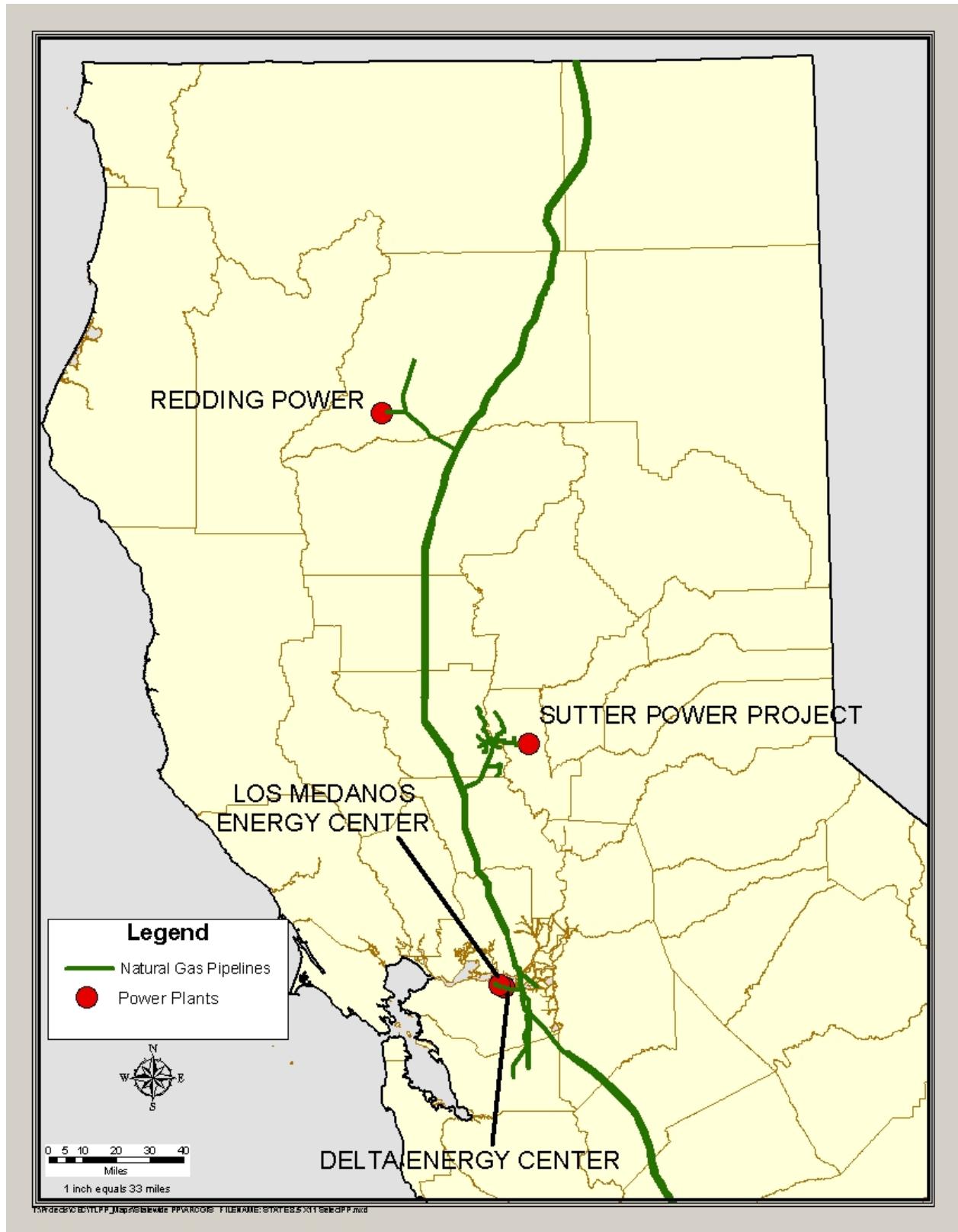
Table 1-1: Power Plant Collected Event Data

Facility	Natural Gas Data				Performance Data				Exhaust Data					
	Btu Content (as-used)	Pipeline Gas Hydrocarbon Composition	Pipeline Gas Inert Composition	Pipeline Gas Specific Gravity	Heat or Fuel Input	MW Output (GT only)	Efficiency Estimate	Ammonia Flow	Process Status	Pre-SCONoX/Pre-SCR NOx	Controlled NOx	Controlled CO	Oxygen Content	Turbine/Stack Exhaust Temperatures
Redding	X	-	-	-	X	-	-	N/A	X	X	X	X	X	-/- N/A
Sutter	X	- ¹	-	-	X	X	-	X	X	X	X	X	X/X	X
LMEC	X	X ²	X ²	-	X	X	X	X	-	-	X	X	X	X/- -
Delta	-	X ²	X ²	X	X	X	X	X	-	-	X	X	X	X/- -

1 – Data supplied were limited to the as-used blended gas composition data.

2 – Data supplied from PG&E pipeline adjacent to Delta gas blending facility, but blended gas composition data for Delta were not available.

Figure 1-1: PG&E Pipeline Route and Power Plant Locations



One limitation of this study is the fact that the three Calpine facilities (Sutter, LMEC, and Delta) all used blended gas fuels, either exclusively or partially, during the excursion event. The data available for these blended gas streams, excepting Sutter, did not include enough data to calculate Wobbe index, so most of the excursion event effect comparisons use gas heat content rather than Wobbe index.

Study Goals

The goals of this study were to obtain quality data for the gas heat content excursion event and corresponding gas turbine operational data during the event as well as to determine any perceived effects to the gas turbine operations due to the increased natural gas heat content. To determine operational effects, the levels of NOx emissions (as measured leaving the turbine) and controlled NOx emissions (as measured following NOx control technology) were analyzed. Ammonia injection rates were also analyzed, since ammonia is used for NOx control at three of the four facilities.

This study will support the assessment of the potential impacts of natural gas variability and natural gas interchangeability rulemaking (CPUC R.04-01-25) on the operations of large natural gas-fired power production facilities. Comments on this study will be used to help define future work necessary to adequately assess this subject.

CHAPTER 2: NATURAL GAS EVENT DATA SUMMARY

Natural gas data were obtained both at the pipeline and for gas mixtures used at various gas turbine sites, with the exception of the Delta facility where the as-used blended fuel gas heat content and composition data were not available.

Pipeline Natural Gas Data

Pipeline specific data for the natural gas excursion were monitored at two locations, Redding and Pittsburg. The Redding natural gas data are from Redding Power Unit #5, which uses the pipeline gas without blending. The Redding natural gas data are limited to Btu content. The Pittsburg natural gas data are from the PG&E Los Medanos pipeline just upstream of a blending station used for the Delta and Los Medanos facilities. The Pittsburg natural gas data include Btu content, specific gravity, and other compositional data (hydrocarbon, inerts, etc.).

Figure 2-1 presents the Redding and Pittsburg pipeline natural gas heat content data, and Pittsburg pipeline natural gas Wobbe index for June 8 through June 13, 2005. The available Pittsburg natural gas data begin June 10.

Figure 2-1: Pipeline Natural Gas Heat Content and Wobbe Index

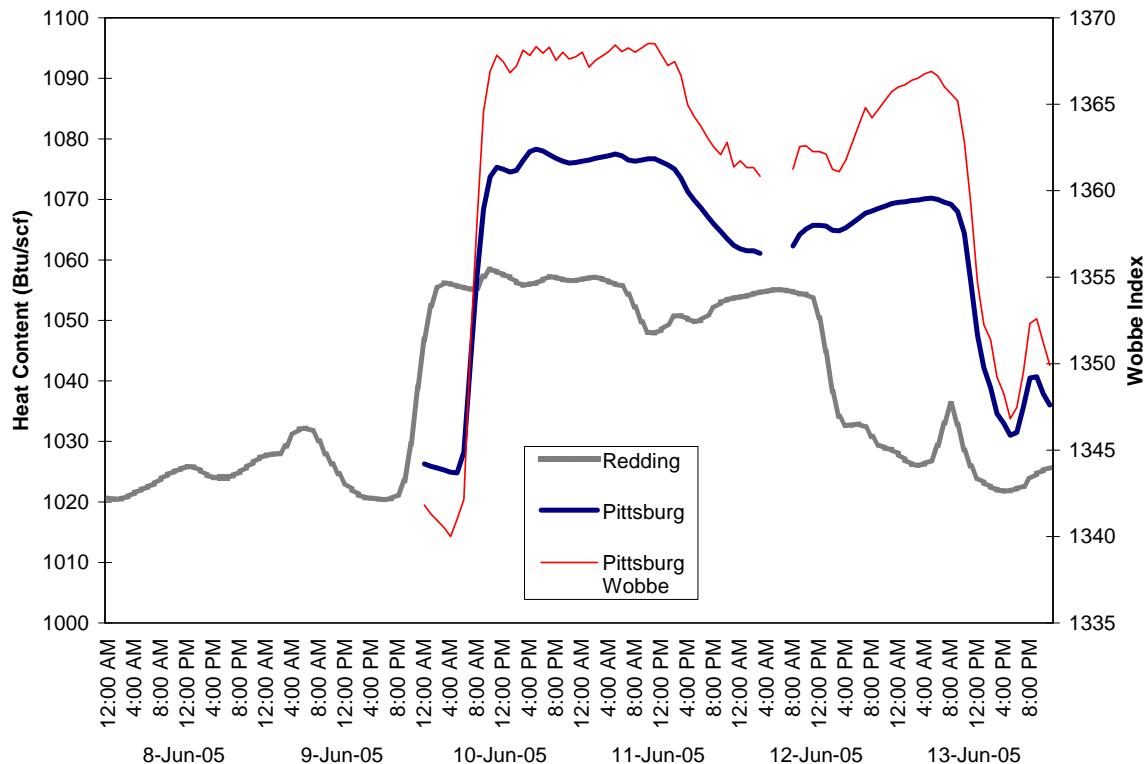
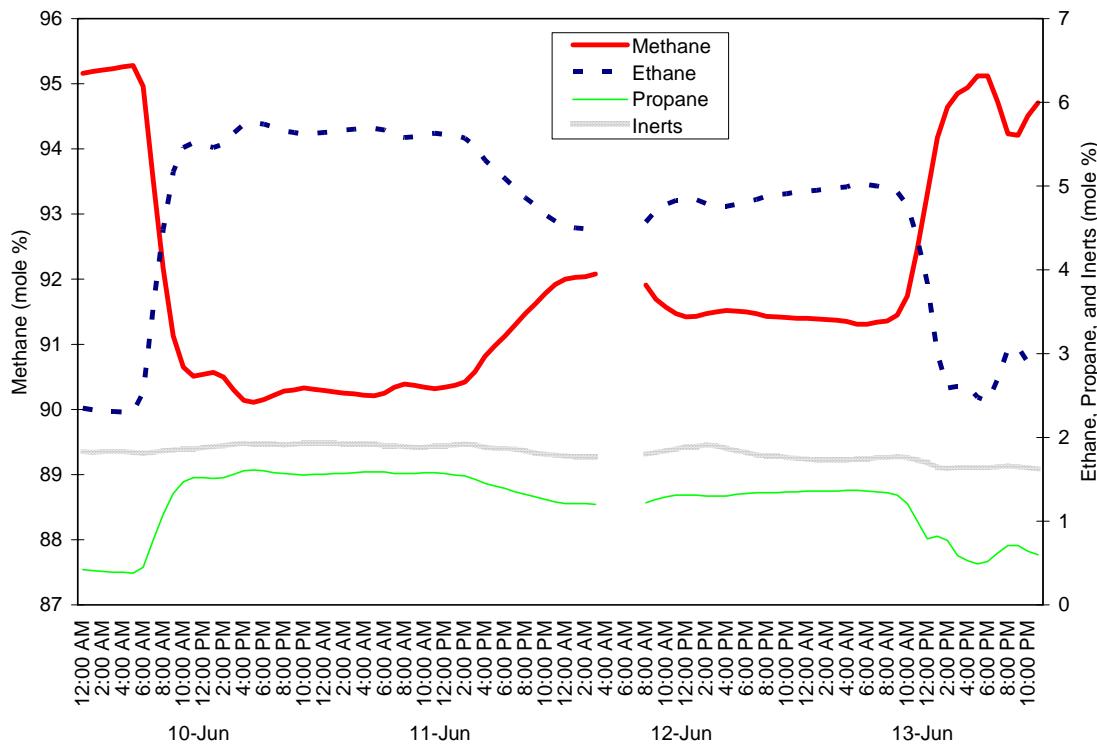


Figure 2-1 shows that the data for the excursion event at the two separate pipeline locations have a very similar shape with a time lag of several hours for the gas to

flow from Redding to Pittsburg. However, the total Btu contents and increases during the excursion event are different - both the heat content and duration of the excursion are greater at Pittsburg. The excursion event heat content and Wobbe index increase at Pittsburg was 5 percent and 2 percent, respectively, during the excursion event, while the heat content increase at Redding was a little less than 4 percent during the excursion event. There does not appear to be any reason why the duration and heat contents should be significantly different in these two locations.

Figures 2-2 and 2-3 present the Pittsburg natural gas compositional data from June 10 through June 13, 2005. For graphing purposes, the data are grouped by components with similar content levels.

Figure 2-2: Pittsburg Natural Gas Major Component Composition Data



As would be predicted, Figure 2-2 shows that during the excursion the methane concentrations decreased by 4 to 5 percent while the ethane and propane concentrations essentially doubled. The higher heating value of the gas is the result of greater percentages of non-methane components such as ethane and propane. The inerts concentrations, which were shown to be entirely nitrogen and carbon dioxide, increased very slightly during the excursion event, with the nitrogen content decreasing and the carbon dioxide content increasing at a greater level to create the overall slight increase in total inerts.

Figure 2-3: Pittsburg Natural Gas Minor Component Composition

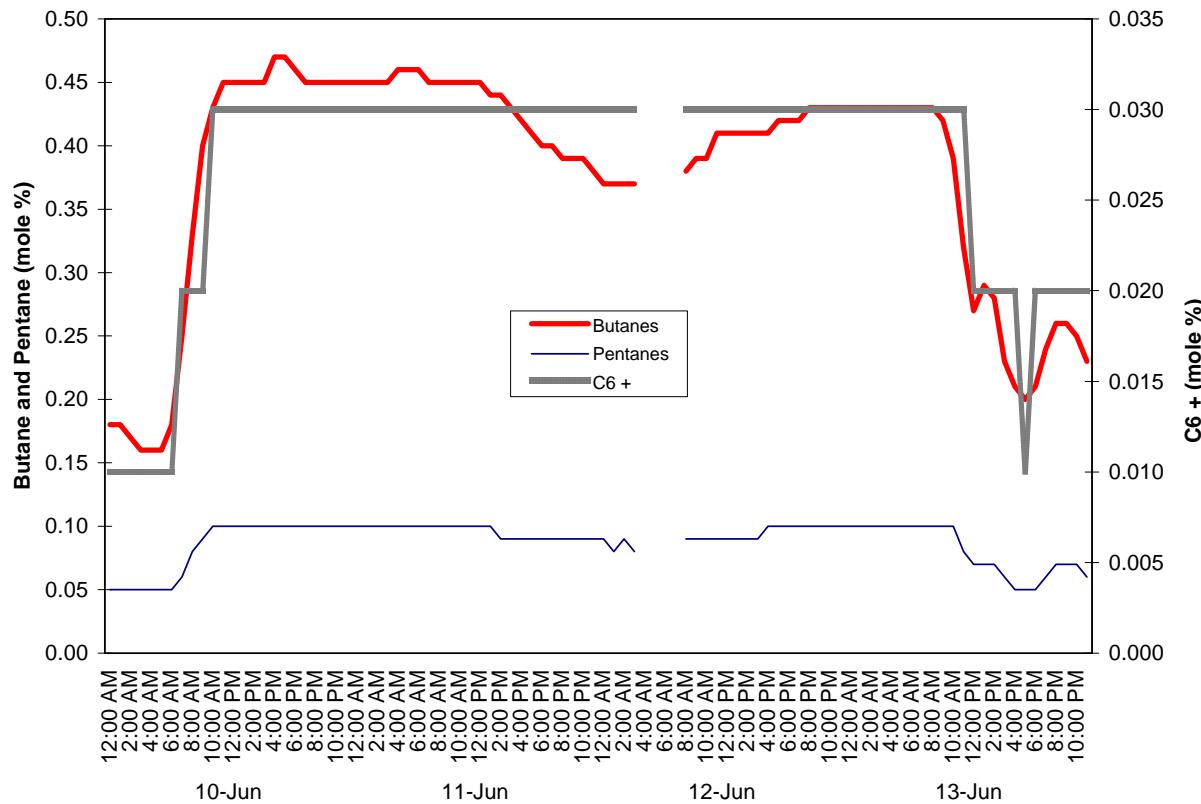


Figure 2-3, like Figure 2-2, shows an increase in the heavier hydrocarbon composition during the heat content excursion event. The total butane (i-butane and n-butane) and total C6 + hydrocarbon concentrations (hydrocarbons with six or more carbon molecules) essentially tripled during the excursion and the total pentane (i-pentane and n-pentane) concentration doubled during the excursion.

The natural gas specific gravity measured at Pittsburg increased by a maximum of just over six percent during the excursion event.

Turbine Fuel Data

The turbine fuel heat content and composition for the Sutter and Los Medanos facilities are not the same as the pipeline fuel since the as-used fuel for each is a blend of sources.

Sutter

Figure 2-4 provides the heat content and Wobbe index data for the Sutter facility fuel during the excursion period.

Figure 2-4: Sutter Natural Gas Heat Content and Wobbe Index

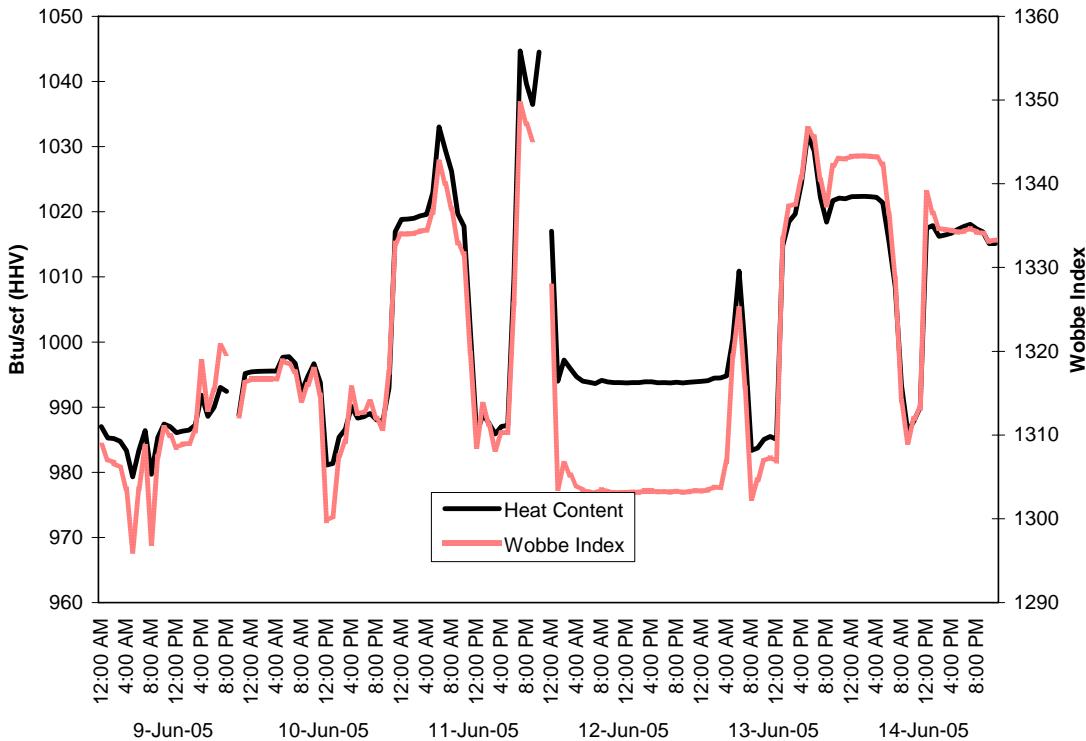


Figure 2-4 shows that the heat content and Wobbe index of the natural gas were variable during the excursion period and do not match the excursion event curve shown in Figure 2-1. The mixing of separate fuel sources allowed the Sutter facility to buffer the impact of the heat content excursion for most of the excursion period; however, the overall heat content and Wobbe index variations during short periods are as large as, or greater than, that shown for the Pittsburg pipeline gas in Figure 2-1.

Limited composition data were also available from the Sutter facility fuel gas. These are presented in Figures 2-5 and 2-6.

Figure 2-5: Sutter Natural Gas Major Component Composition

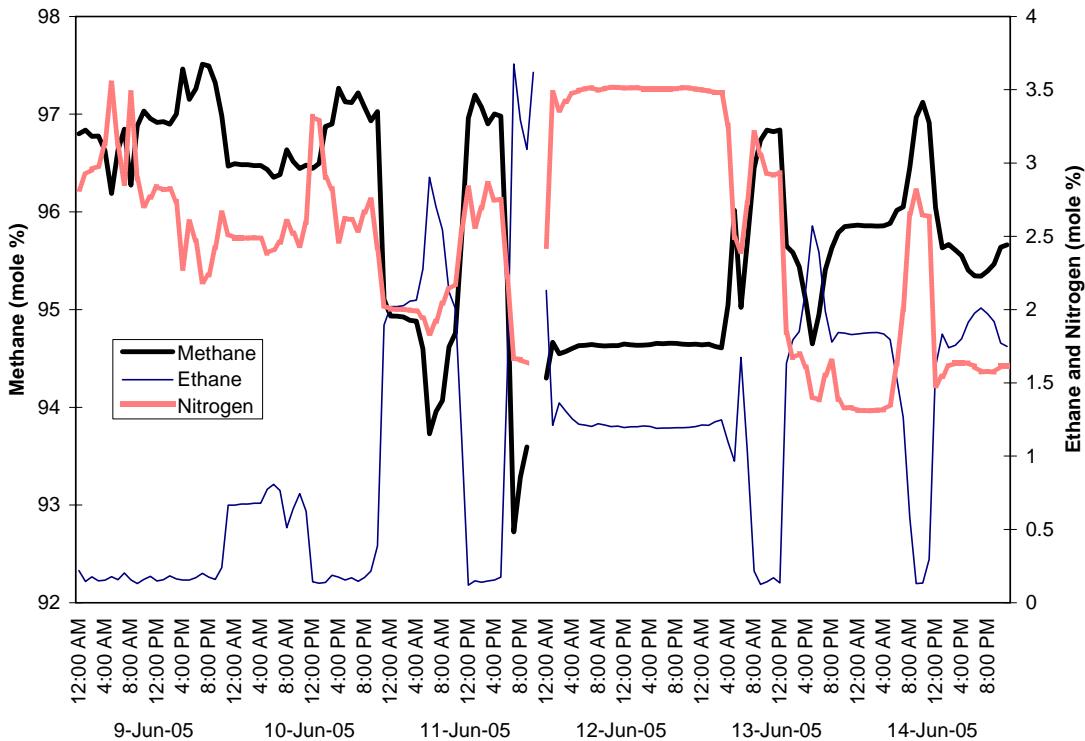
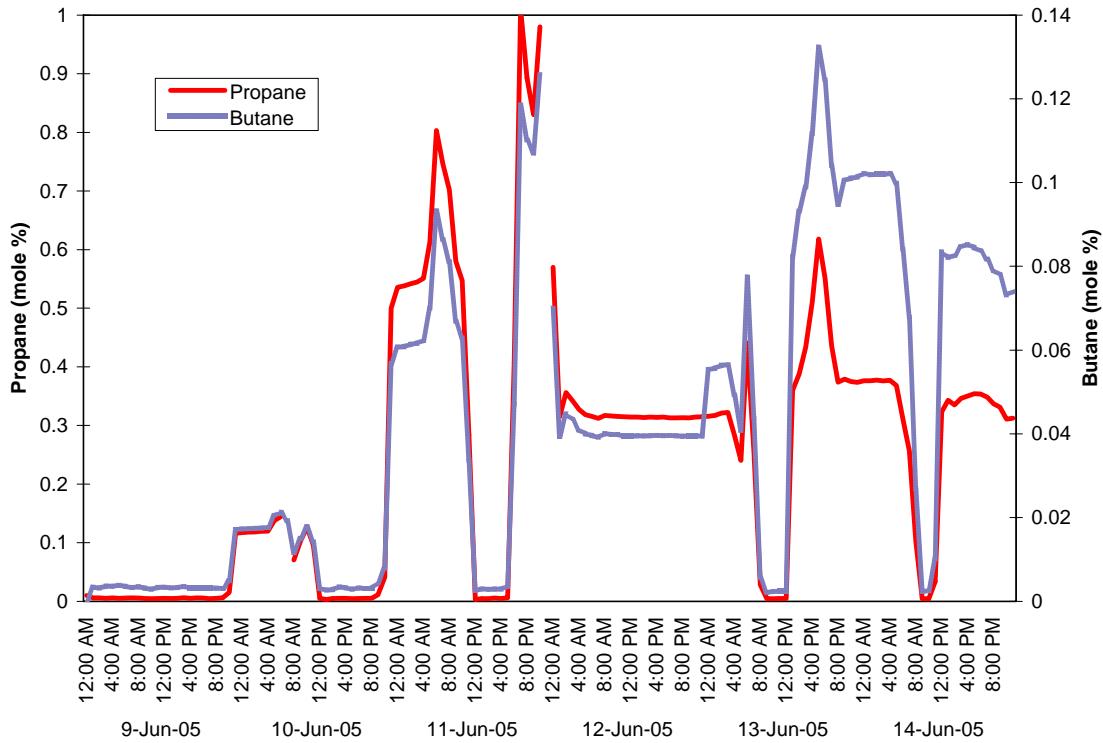


Figure 2-5 shows that the composition of the major components varied significantly during the excursion period. The variable mixture of different fuel sources created a highly variable fuel mix. The methane composition varies by almost 5 percent, the ethane composition varies from near 0 percent to over 3.5 percent, and the nitrogen content varies by nearly a factor of 3.

A critical review of the Sutter natural gas fuel data indicates that the non-pipeline fuel source being used in the blend contains an almost exclusive mixture of methane (~97 percent) and nitrogen (~3 percent) with very little ethane (~0.1 percent) and essentially no propane or butane. Using this composition assumption for the non-pipeline blend gas, Figure 2-6 shows clearly when pipeline gas with its higher propane and butane content is being used in the fuel gas blend.

Figure 2-6: Sutter Natural Gas Minor Component Composition

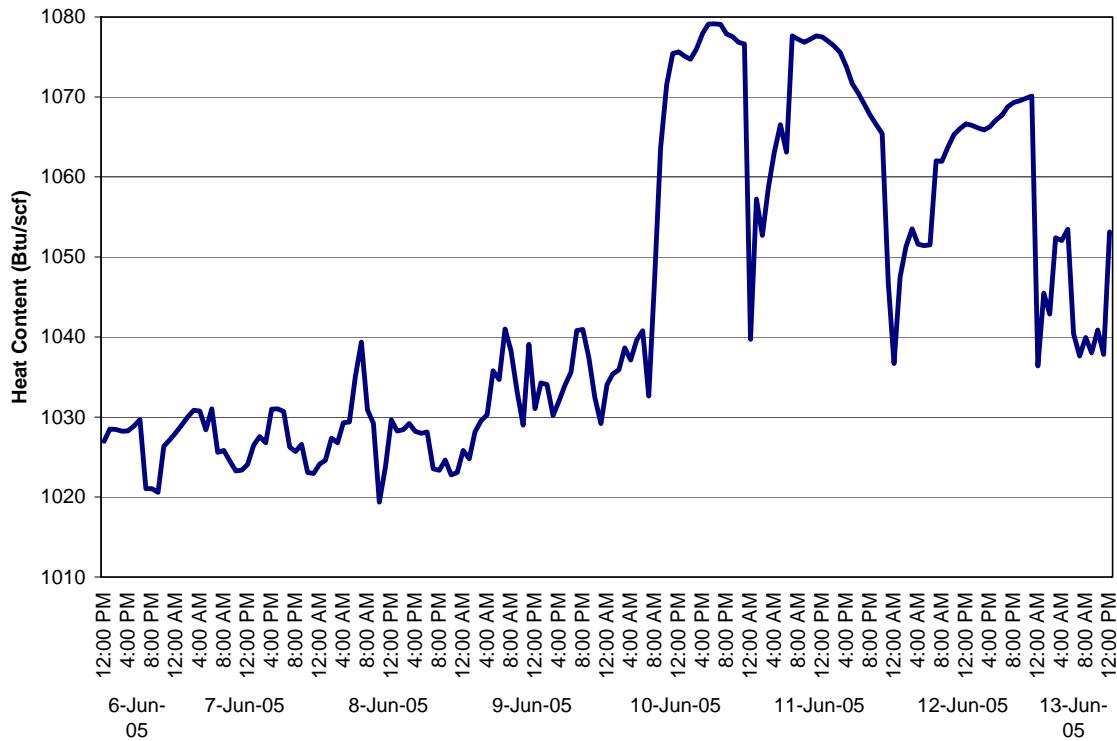


Overall, the monitored propane and butane concentrations at Sutter are significantly lower than the pipeline concentrations monitored at Pittsburg due to the fuel bending.

Los Medanos

Figure 2-7 shows the heat content of the natural gas used at the Los Medanos facility during the excursion event.

Figure 2-7: Los Medanos Natural Gas Heat Content Data



This figure matches much of the Pittsburg pipeline gas excursion curve, but due to the facility occasionally accepting the Calpine/PG&E mixed gas, as well as the unmixed pipeline gas, the curve is broken up with areas of lower Btu content. For periods of time during the excursion event, this facility consumed gas with a Btu content that was nearly 5 percent higher than the average heat content for the days prior to the excursion event.

Natural Gas Composition Definitions and Regulations

The data presented above were compared to rules and regulations regarding the content of natural gas. Current relevant natural gas definitions and regulations are as follows:

1. PG&E Rule 21 requires pipeline natural gas to have a heating value that is consistent with the standards established by PG&E for each Receipt Point(s), and requires gas interchangeability in accordance with the methods and limits presented in American Gas Association (AGA) Bulletin 36.⁶
2. SoCalGas Rule 30 requires pipeline natural gas to meet lower and upper Btu limits of 970 and 1150 Btu/scf (HHV, Higher Heating Value), respectively, and to meet AGA Bulletin 36 interchangeability indices.⁷
3. The U.S. Environmental Protection Agency (EPA), for the purposes of its New Source Performance Standard regulation for gas turbines (40 CFR Part 60 Subpart GG), defines natural gas as containing at least 70 percent by volume methane or having a Btu content of 950 to 1100 Btu (HHV).⁸

It should be noted that PG&E Rule 21 does not include the Wobbe index in its natural gas definitions, limits, or specifications.

The natural gas in the pipeline during the excursion event remained within the higher end of the Btu limit of these definitions, and the methane content remained over 90 percent during the excursion. The Btu content of the gas stayed within the maximum allowable PG&E specification for that pipeline (1080 Btu/scf).

Additionally, the variability of the Wobbe index, as evidenced at Pittsburg, would have complied with SoCalGas Rule 30 specifications and remained well below 1400.

CHAPTER 3: GAS TURBINE DATA SUMMARY

As noted previously, four facilities provided natural gas and turbine performance data. The gas turbine model and number and associated emission control technologies for each of those facilities are as follows:

Table 3-1: Gas Turbine Description Summary

Facility	Turbine Type (Number)	MW (Turbine/Plant)	Emission Control Technologies
Redding	Alstom GTX100 (1)	43/56 (Unit 5 only)	SCONOX
Sutter	Westinghouse 501FD (2)	175/540	DLN, SCR, and Oxidation Catalyst
Delta	Westinghouse 501FD (3)	175/861	DLN, SCR
LMEC	General Electric 7FA (2)	172/555	DLN, SCR, and Oxidation Catalyst

All four facilities have NOx controls which will adjust to maintain preset NOx exhaust concentration limits. Three of the four facilities use ammonia to control NOx emissions; only the SCONOX technology, used at the Redding facility, does not use ammonia.

Redding

The Redding facility provided natural gas heat content data, and gas turbine fuel use and certain exhaust emission parameters. As noted above, this facility does not use ammonia. The operating heat input of the gas turbine during the excursion is provided in Figure 3-1.

Figure 3-1: Redding Turbine Operating Heat Input Load Data

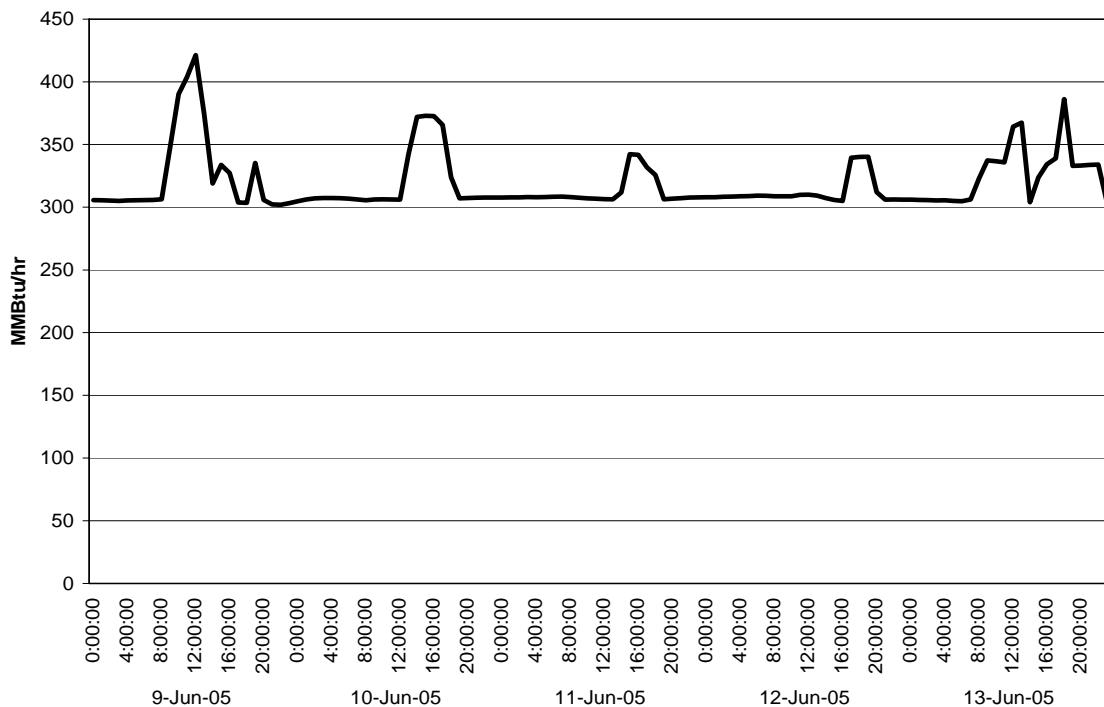
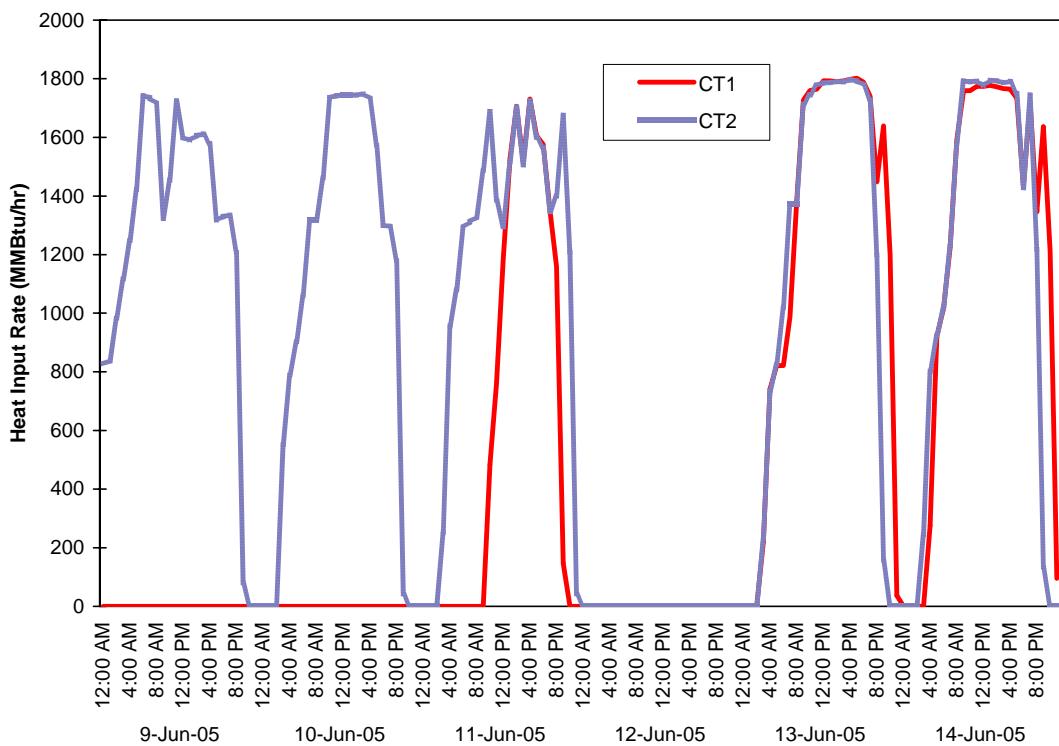


Figure 3-1 shows that the facility was running in a fairly consistent reduced load mode with daily increases in load during the afternoon. Less variable operating conditions are desired when determining the effect of the gas heat content increase on turbine operations. The more operating parameters that are static during the excursion event, the more likely that actual effects can be observed.

Sutter

The Sutter facility provided natural gas Btu content and composition data, gas turbine fuel use, MW production, and certain exhaust emission parameters. Ammonia is used for NOx control at this facility. The operating heat input of the two gas turbines during the excursion event is provided in Figure 3-2.

Figure 3-2: Sutter Turbines Operating Heat Input

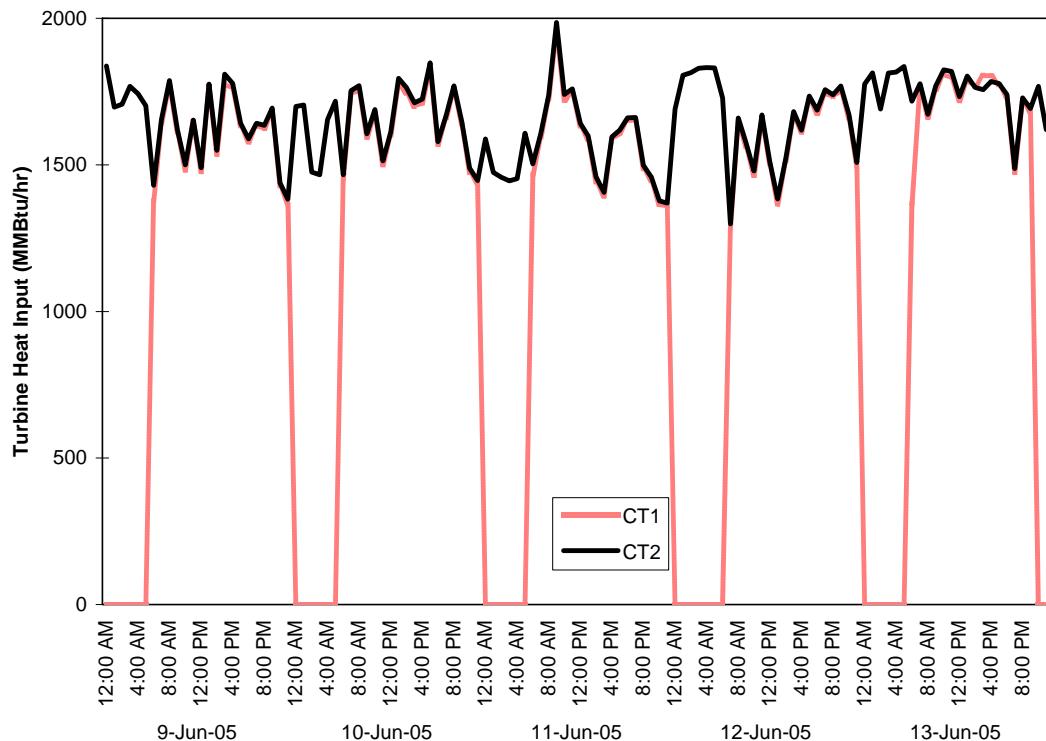


This figure shows that the Sutter facility operations were variable during the excursion period. However, there are three times when operations were consistent for a few hours at a time (on June 10, June 13, and June 14) that may provide some useful effects data. However, the rest of the period either represents down time, startup or shutdown periods, or is otherwise considered too variable for comparative purposes.

Los Medanos

The LMEC facility provided natural gas heat content, gas turbine fuel use and MW output, and certain exhaust emission parameters. The facility uses ammonia for NOx control. The operating heat input of the two gas turbines during the excursion is provided in Figure 3-3.

Figure 3-3: LMEC Turbine Operating Heat Input

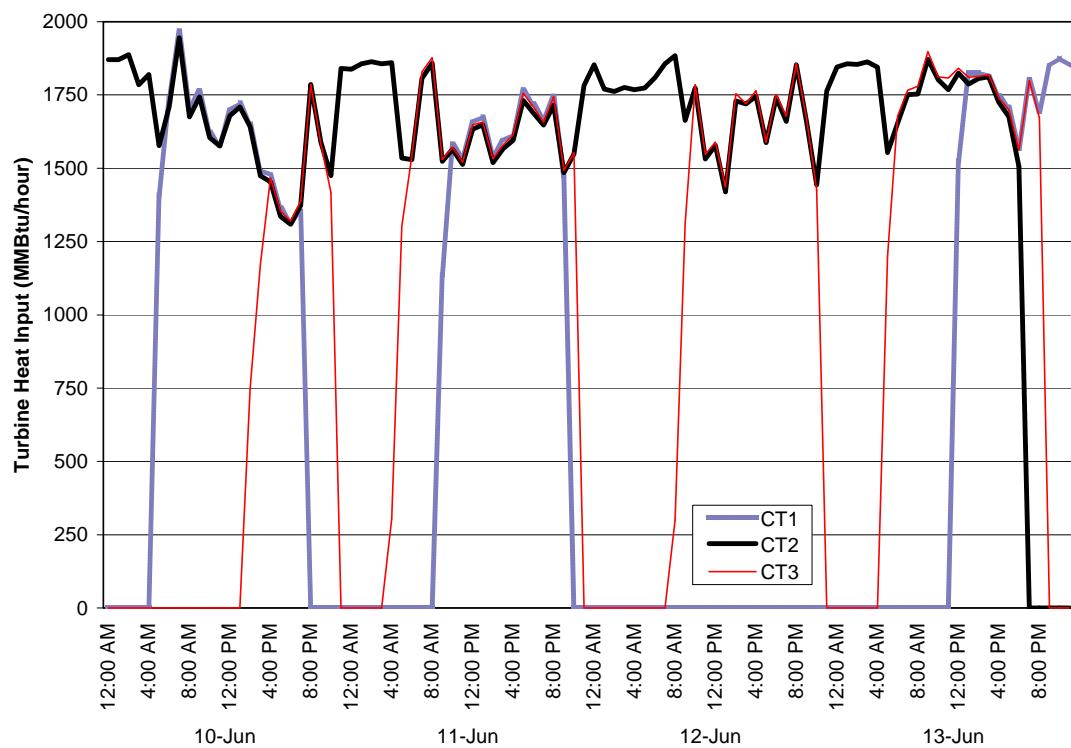


As shown in Figure 3-3, the load input of Turbine 2 (CT2), while somewhat variable, ranged between approximately 1300 and 2000 MM Btu/hr for the entire period of the heat content excursion, while Turbine 1 (CT1) underwent many startup/shutdown cycles during the period. The major limitation for using LMEC data to determine effects of the higher Btu gas is that only controlled emissions data were available. Therefore, the ammonia injection quantities will be the main variable assessed to determine if any effects were shown during the excursion event. However, due to the hourly load variability, the normal ammonia injection rate variability may be greater than what would occur due from an increase in gas heat content/Wobbe index.

Delta

This facility was operating in load following mode during the period of the excursion. Similar to LMEC, the small quantity of highly variable operating data that was obtained has limited use in predicting effects from the natural gas heat content excursion. This is exacerbated by the fact that actual as-used natural gas heat content data are not available for the period of the excursion event. However, for information purposes, the operating heat input data for the three Delta turbines are presented in Figure 3-4.

Figure 3-4: Delta Turbine Operating Heat Loading and MW Output



As shown in Figure 3-4, the load is highly variable and Turbines 1 (CT1) and 3 (CT3) went through numerous startup and shutdowns during the period. Turbine 2 (CT2) operated more consistently than the other two turbines.

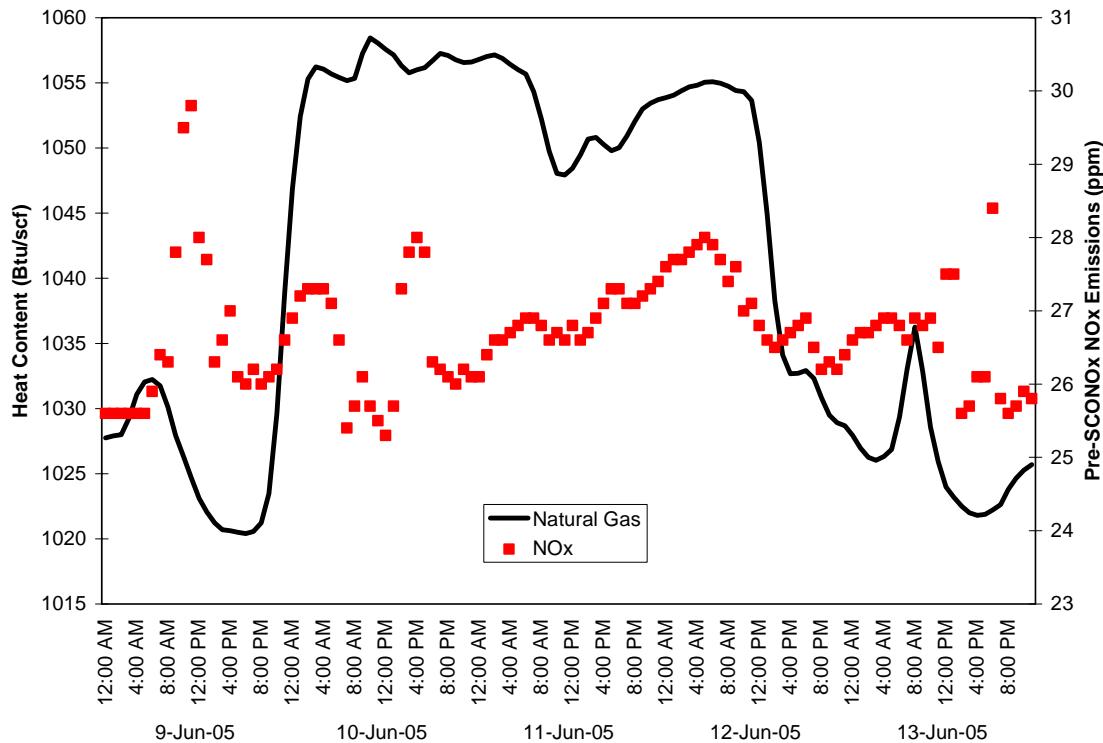
CHAPTER 4: OBSERVED EVENT EFFECTS

The observed effects are presented facility by facility and for each turbine, if multiple turbine data are available.

Redding

The data obtained for the Redding gas turbine included pre- and post SCONOx NOx levels. The Redding facility operated with some consistency during the excursion event period so determining the relationship between the heat content of the gas and NOx emissions is fairly straightforward. Figure 4-1 shows the pre-SCONOx NOx emissions (@ actual O₂ levels), the gas turbine heat input, and the natural gas heat content for the data collection period.

Figure 4-1: Redding Turbine Pre-SCONOx NOx Levels and Fuel Heat Content



As noted previously, and shown in Figure 3-1, the load increased every afternoon to handle additional demand, so the increases in NOx concentrations seen in the afternoon are at least partially due to the increase in load. By removing these peaking load periods a more definitive relationship can be established. This relationship is shown in Figure 4-2.

Figure 4-2: Redding Turbine Pre-SCONoX NOx Emissions Trend with Increased Fuel Heat Content

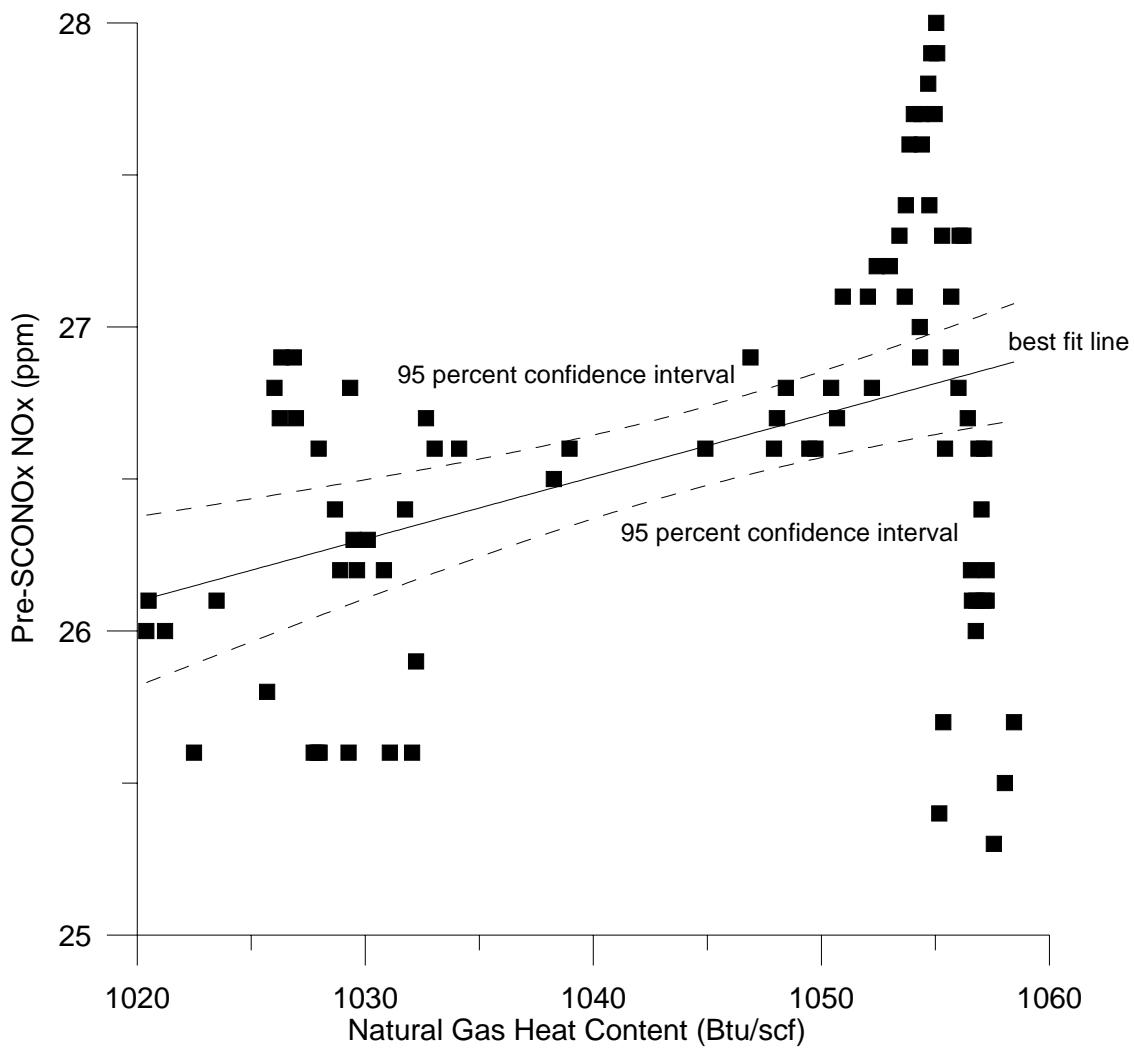
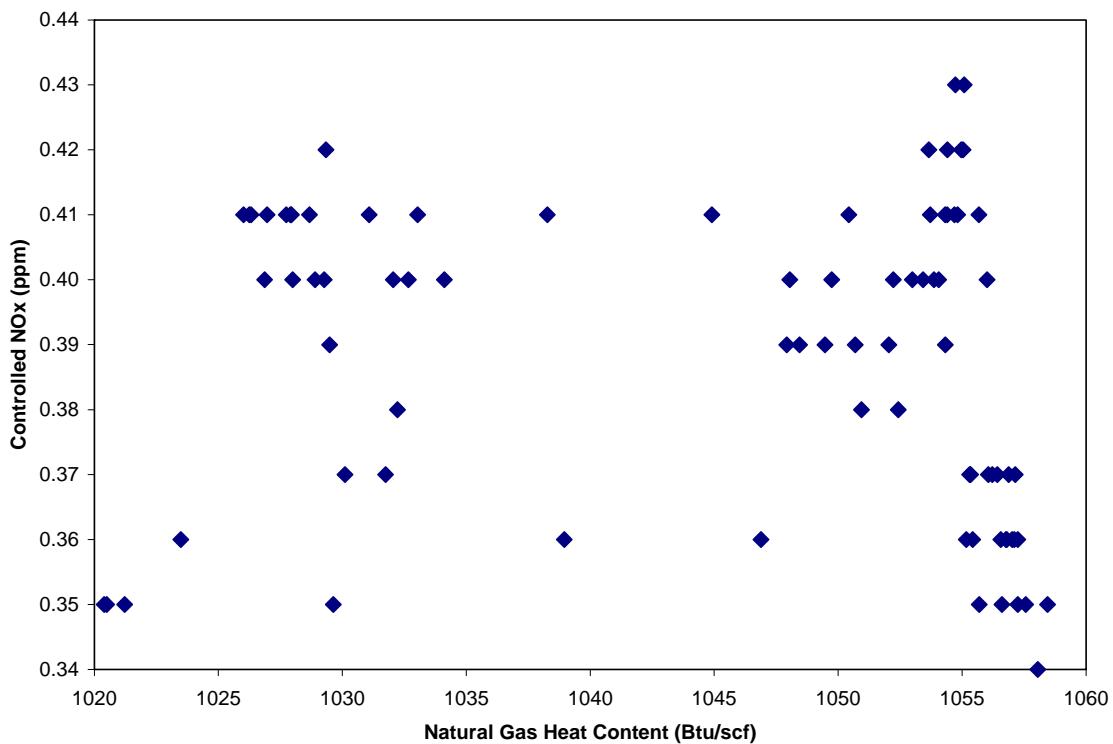


Figure 4-2 predicts that, for the range of natural gas heat contents observed, the pre-SCONoX NOx emissions will increase approximately 4 percent for a heat content increase of 4 percent. The turbine load represented by this data was limited to approximate values between 300 and 310 MMBtu/hr heat input (see Figure 3-1), which is approximately 60 percent of full load. It is possible that the effects shown in Figure 4-2 would be more pronounced at full load. Figure 4-2 also presents a linear regression best fit line and a 95 percent confidence interval for that fit.

Figure 4-3, using the same load level range as in Figure 4-2, shows that there appears to be no such pattern for the controlled NOx emissions (@15% O₂). The SCONox system appears to be able to compensate for the apparent increase in pre-SCONox NOx emissions caused by the increase in natural gas heat content/Wobbe index.

Figure 4-3: Redding Turbine Controlled NOx Concentration versus Natural Gas Heat Content

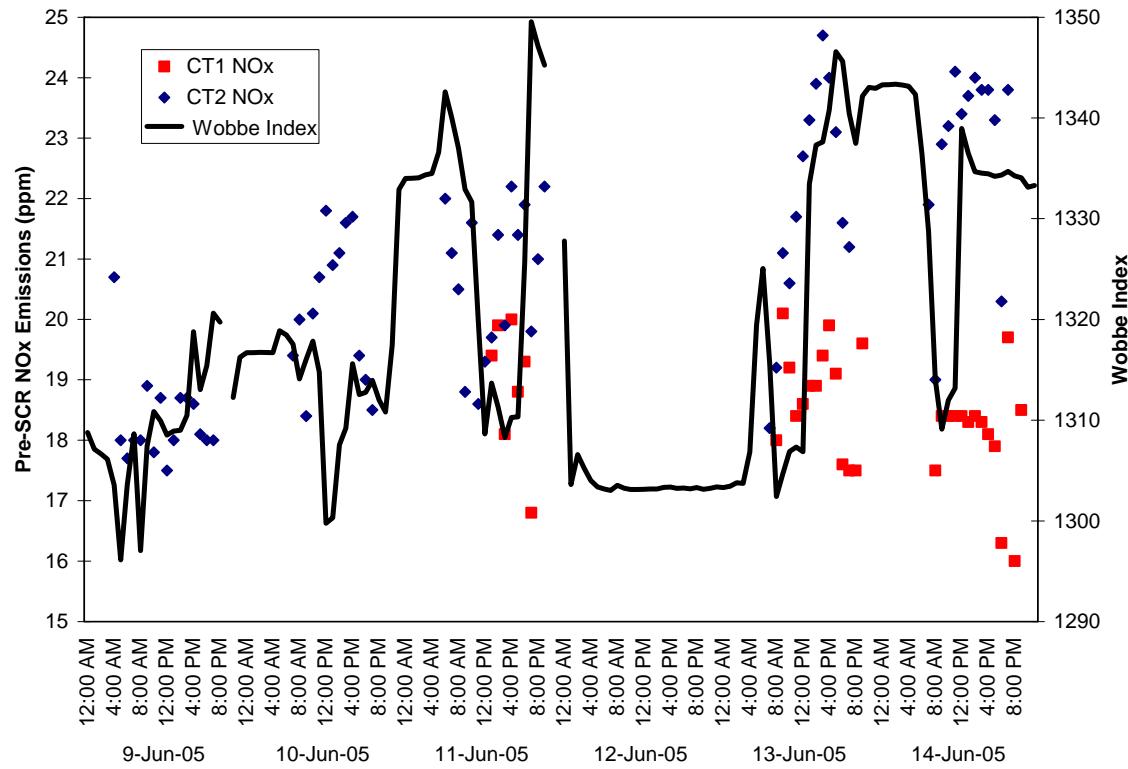


In conclusion, the increased heat content of the natural gas caused a slight increase in pre-SCONoX NOx emissions; however, the SCONoX control system was able to compensate so that the exhaust emissions did not increase by the same factor.

Sutter

The data obtained for the Sutter gas turbines include pre- and post-SCR NOx levels and ammonia injection rates. The Sutter facility operated for two periods of stable load during the excursion event (see Figure 3-2); data from these periods are used in the analysis. Figure 4-4 shows the pre-SCR NOx emissions (@15% O₂) for normal operating hours and fuel Wobbe index during the entire data collection period.

Figure 4-4: Sutter Pre-SCR NOx Emissions and Wobbe Index



The data in Figure 4-4 can be somewhat misleading since the data cover all normal operating data regardless of turbine load, and turbine load will clearly affect NOx emissions. By focusing on Sutter CT2 and its periods with stable loads, a more definitive relationship between pre-SCR NOx levels and fuel heat content/Wobbe index can be established. This relationship is shown in Figures 4-5 and 4-6 (NOx levels not corrected to 15% O₂).

Figure 4-5: Sutter CT2 Pre-SCR NOx Levels versus Natural Gas Heat Content

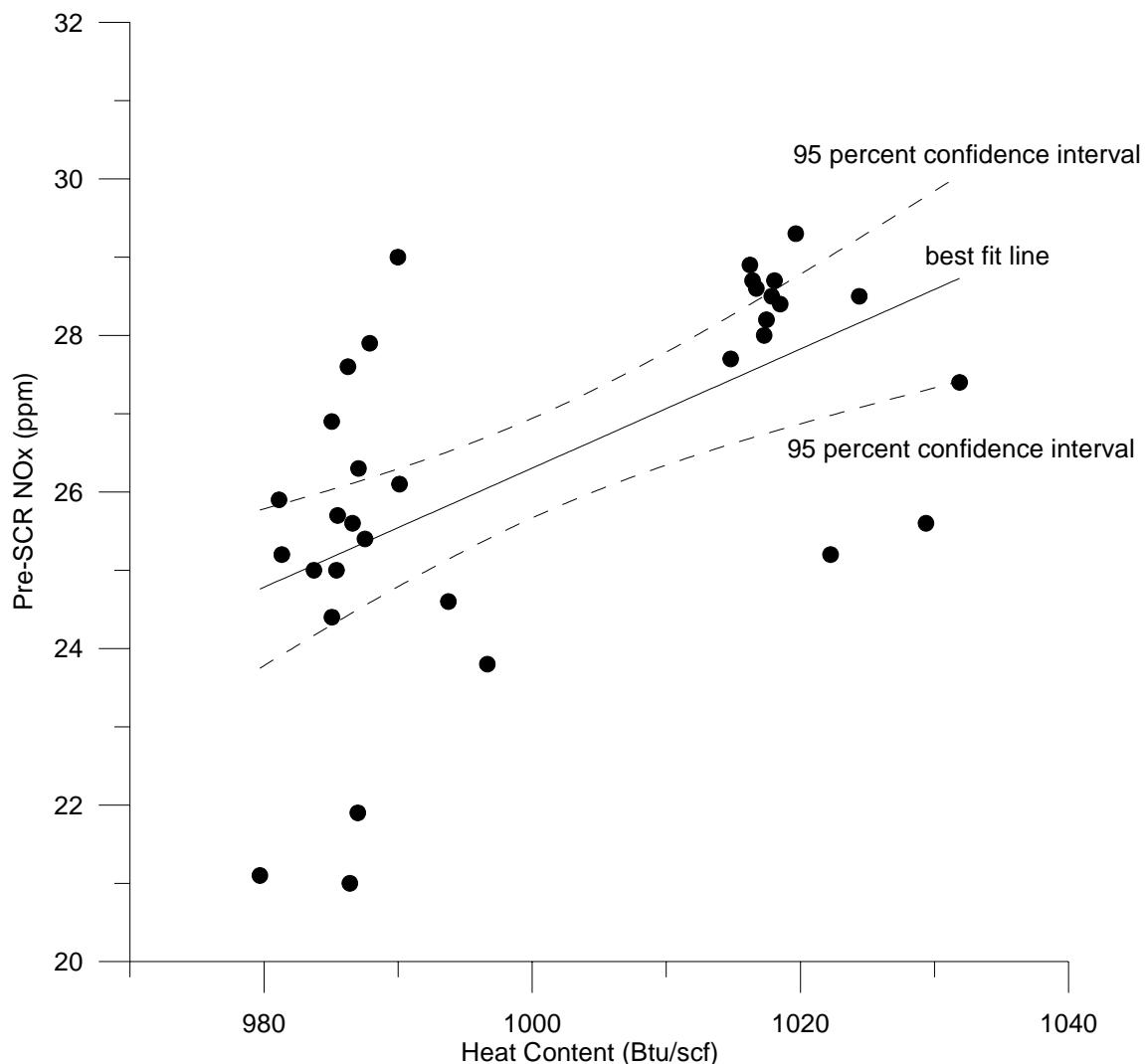


Figure 4-5 predicts that, for the range of natural gas heat contents observed, the pre-SCR NOx emissions will increase approximately 15 percent for a heat content increase of 5 percent at high turbine loads (1700 to 1800 MMBtu/hr). Figure 4-5 also presents a linear regression best fit line and 95 percent confidence interval for that fit.

Figure 4-6: Sutter CT2 Pre-SCR NOx Levels versus Wobbe Index

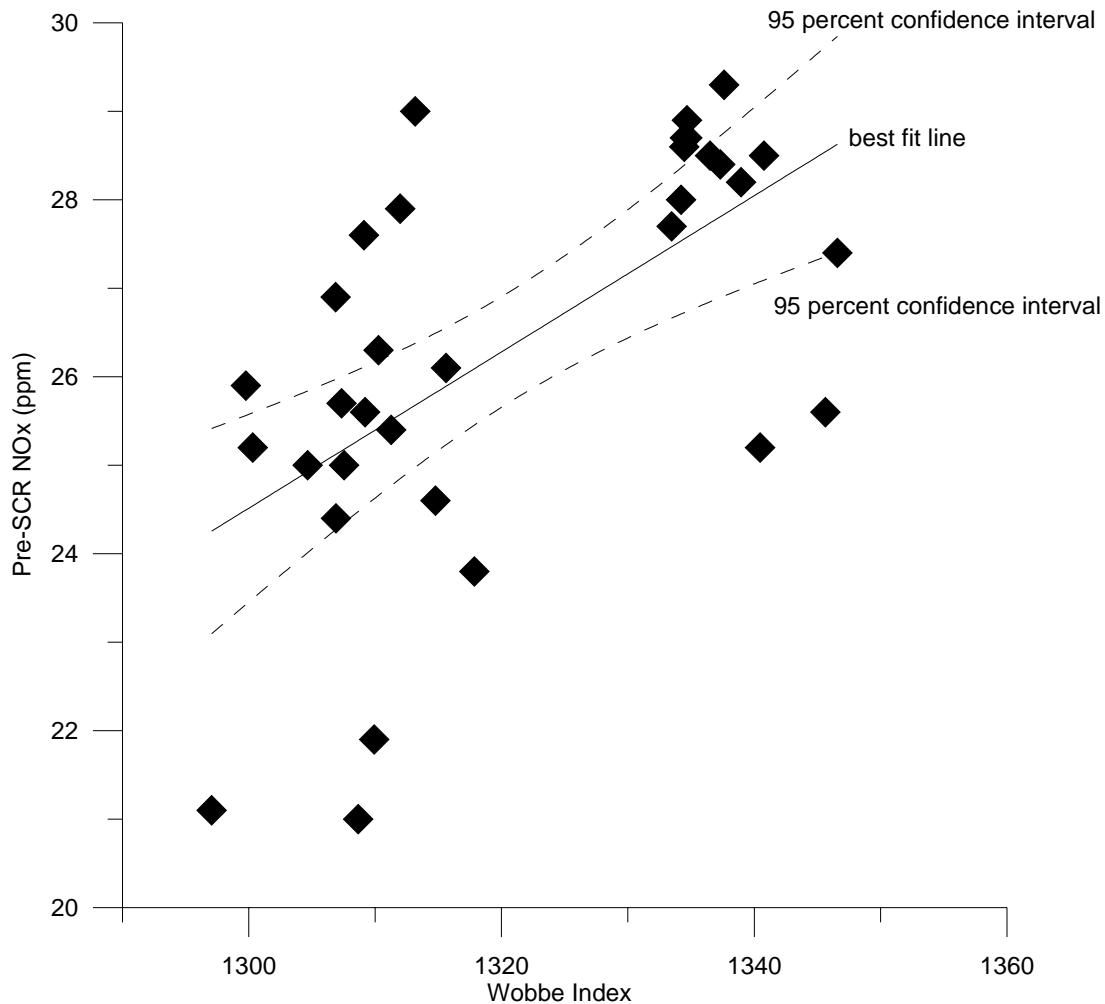


Figure 4-6 predicts that, for the range of Wobbe index observed, the pre-SCR NOx emissions will increase approximately 15 percent for a Wobbe index increase of 3.5 percent at high turbine loads (1700 to 1800 MMBtu/hr). Figure 4-6 also presents a linear regression best fit line and 95 percent confidence interval for that fit.

A similar relationship between ammonia injection and natural gas heat content/Wobbe index is shown in Figures 4-7 and 4-8.

Figure 4-7: Sutter Turbines Ammonia Use versus Natural Gas Heat Content

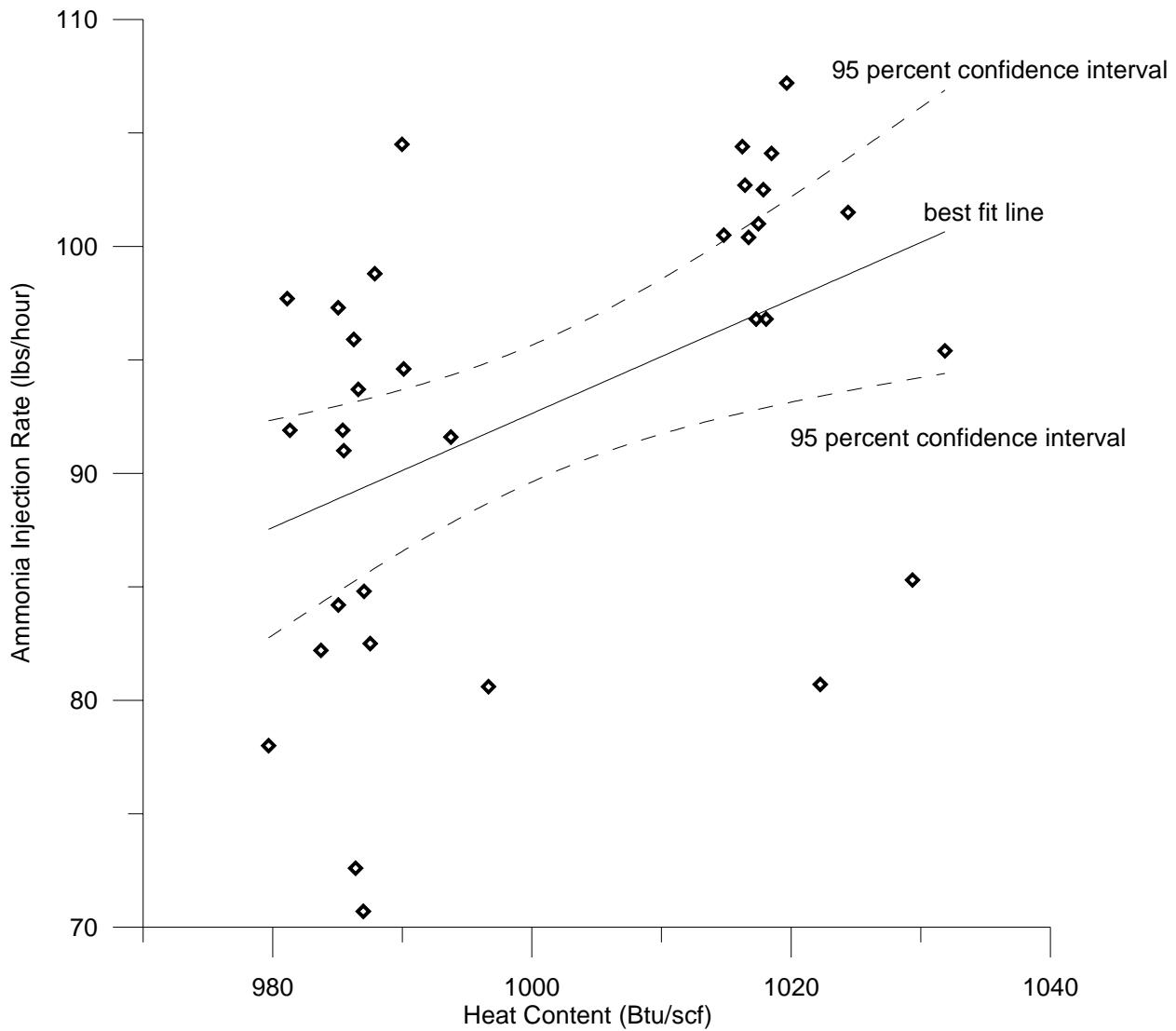


Figure 4-7 predicts that, for the range of natural gas heat contents observed, the ammonia consumption will increase approximately 10 percent for a heat content increase of 5 percent. Figure 4-7 also presents a linear regression best fit line and a 95 percent confidence interval for that fit.

Figure 4-8: Sutter Turbines Ammonia Use versus Wobbe Index

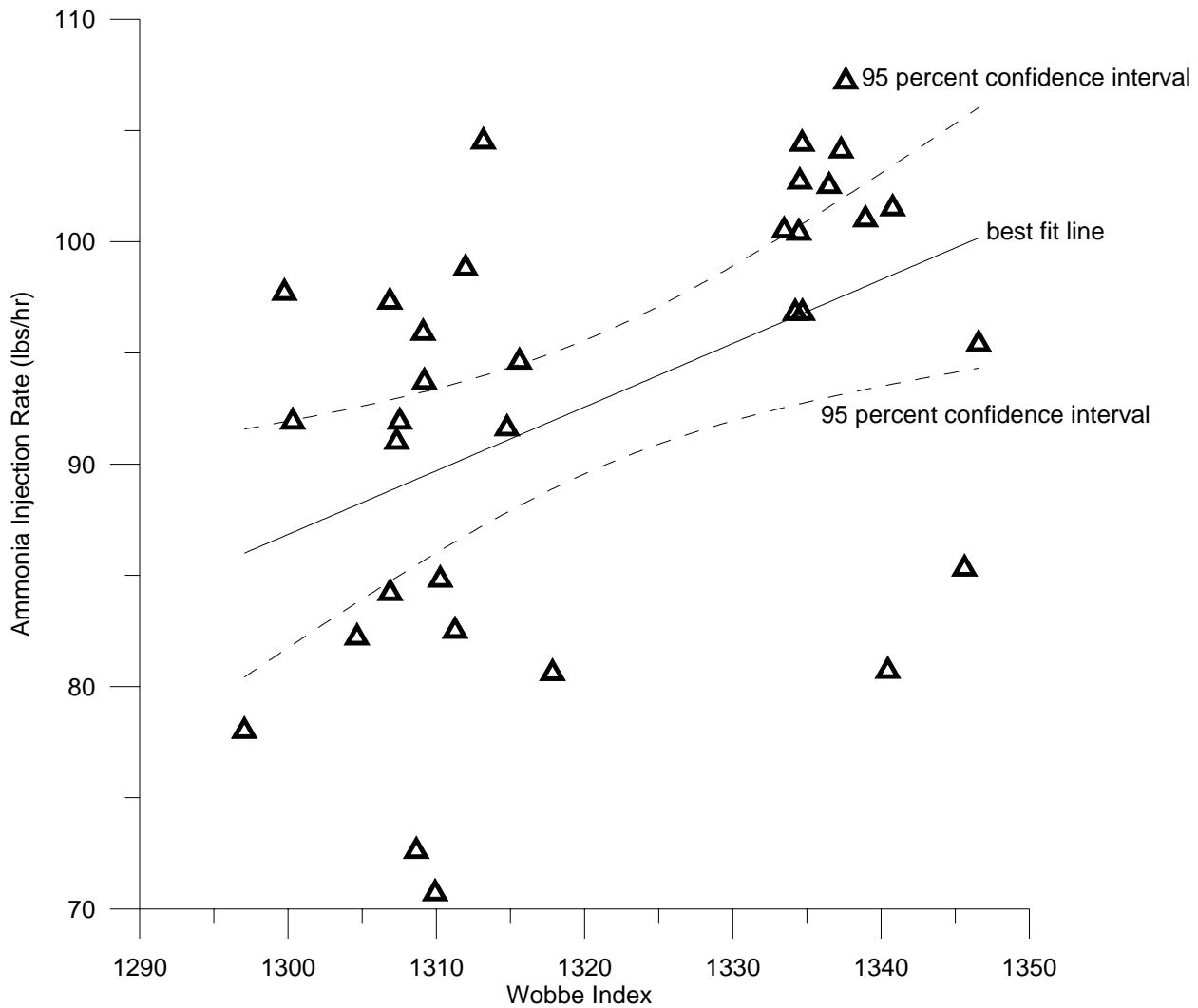


Figure 4-8 predicts that, for the range of natural gas heat contents observed, the ammonia consumption will increase approximately 10 percent for a 3.5 percent increase in Wobbe index. Figure 4-8 also presents a linear regression best fit line and a 95 percent confidence interval for that fit.

Figures 4-9 and 4-10 show that the controlled NOx emissions (@15% O₂) do not appear to be affected by the increase in fuel heat content/Wobbe index. With the exception of one value for Turbine 1, the SCR system controlled the NOx emissions to 2.2 to 2.3 parts per million (referenced to 15 percent O₂).

Figure 4-9: Sutter Turbines Controlled NOx Concentration versus Natural Gas Heat Content

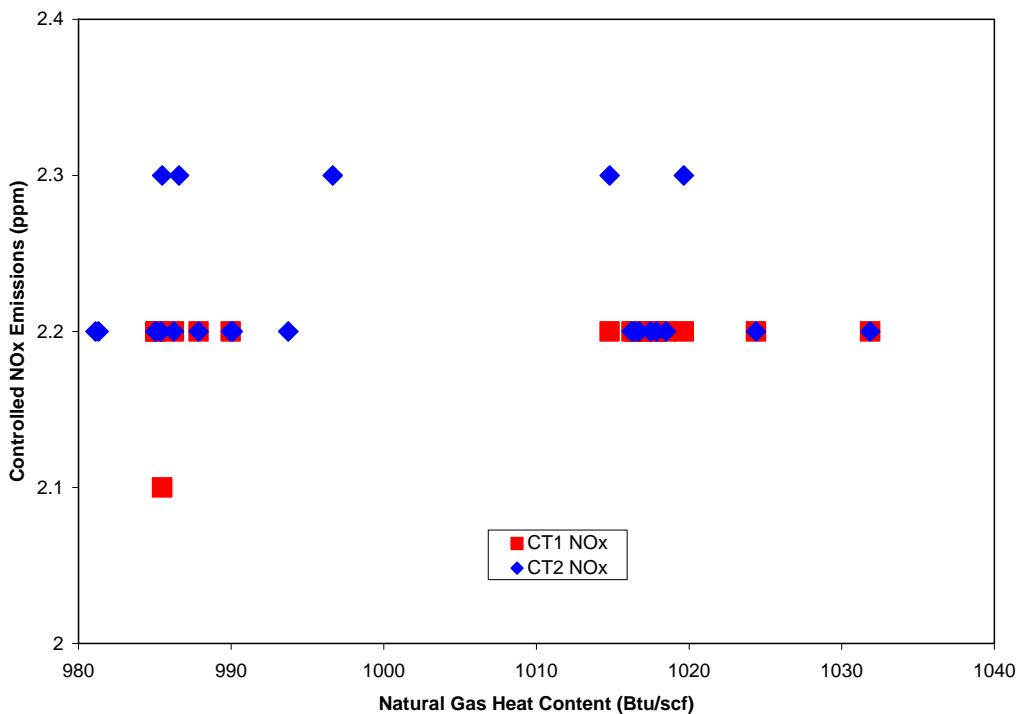
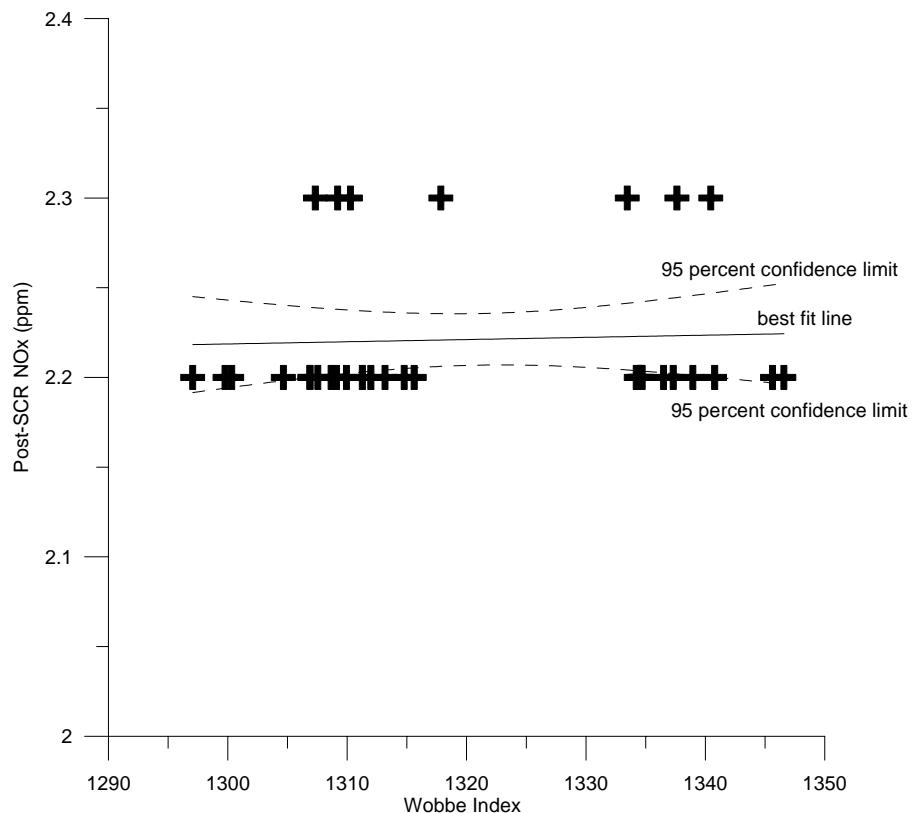


Figure 4-10: Sutter Turbines Controlled NOx Concentration versus Wobbe Index



In conclusion, the increase in natural gas heat content/Wobbe index does not significantly affect the controlled NOx concentrations at the Sutter facility but does seem to cause a small increase in pre-SCR NOx emissions and a corresponding increase in the NOx control system's ammonia consumption.

Los Medanos

The data obtained for LMEC did not include pre-SCR NOx emissions, so it will be more difficult to determine observable effects of the natural gas heat content excursion. This is exacerbated by the extreme load fluctuations that occurred during the period of the excursion event, and the fact that the natural gas fuel data provided for LMEC do not overlap well enough with the periods before and after the excursion event to be able to show the effects of increases in heat content/Wobbe index. Figures 4-11 through 4-13 show ammonia injection rate data and relationships and Figure 4-14 provides NOx emission concentrations during the period for both turbines. The corresponding as-fired natural gas heat content data are also shown on Figures 4-11 and 4-14. The turbine operating data shown are for normal operations excluding startup hours.

Figure 4-11: LMEC Gas Turbines Ammonia Injection Rates

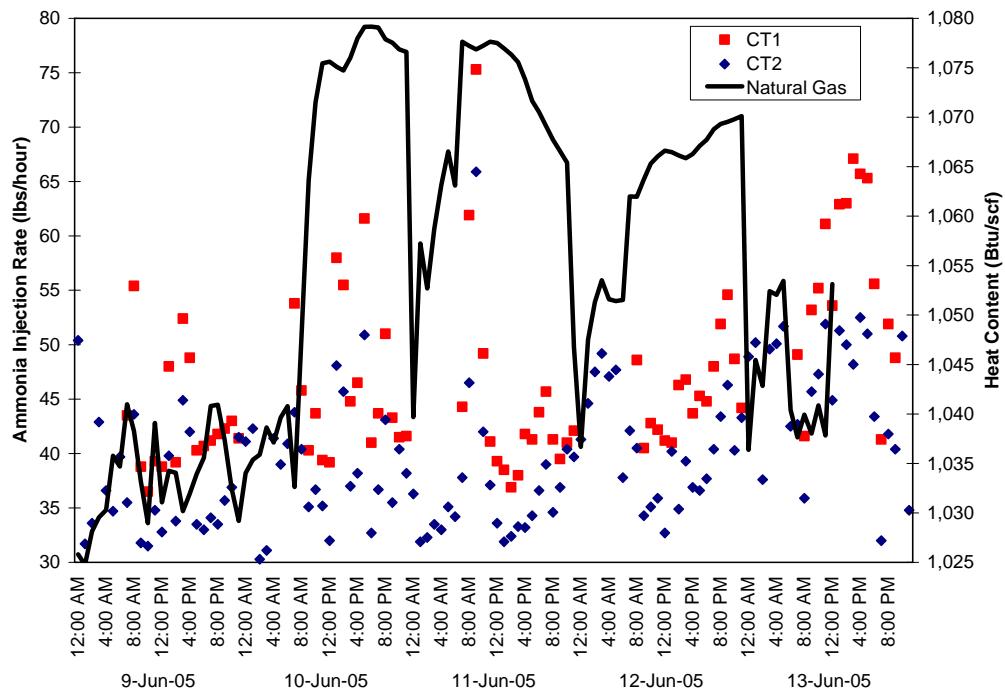


Figure 4-11 shows a potential minor increase in ammonia flow versus increased natural gas heat content. This relationship has been further compared in Figure 4-12 which plots ammonia injection rates per unit heat rate versus the natural gas heat content.

Figure 4-12: LMEC Turbine Heat Load Adjusted Ammonia Injection Rate versus Fuel Heat Content

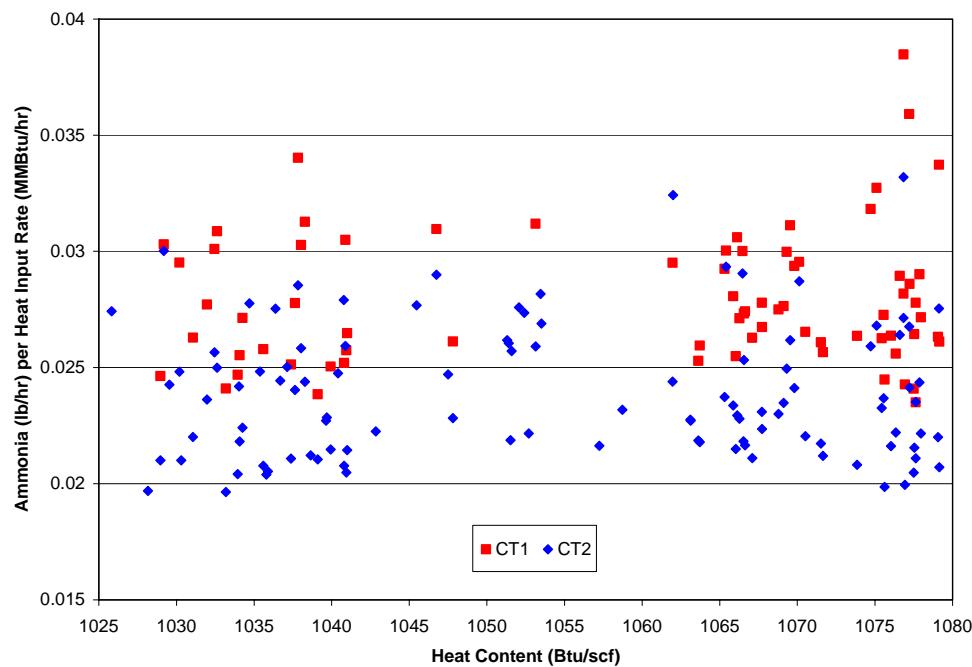


Figure 4-12 shows that there may be a small increase in the ammonia injection rate as the heat content of the natural gas increases. However, due to the operational variability, specific statistical relationships cannot be reliably determined.

In general, as shown in Figure 4-13 below, the ammonia injection rate increases with increased heat input rates. However, this relationship is much stronger for turbine heat input rates above 1700 MMBtu/hr.

Figure 4-13: LMEC Gas Turbines Ammonia Injection Rates versus Heat Input

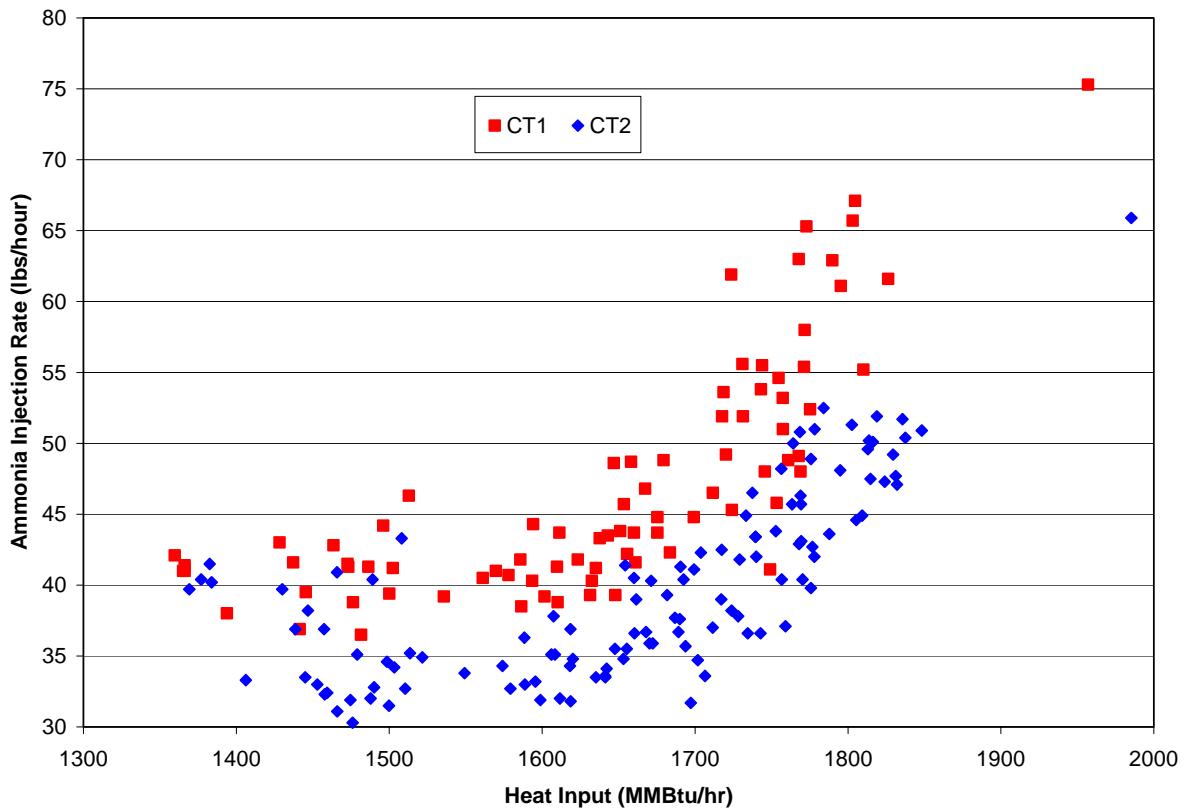
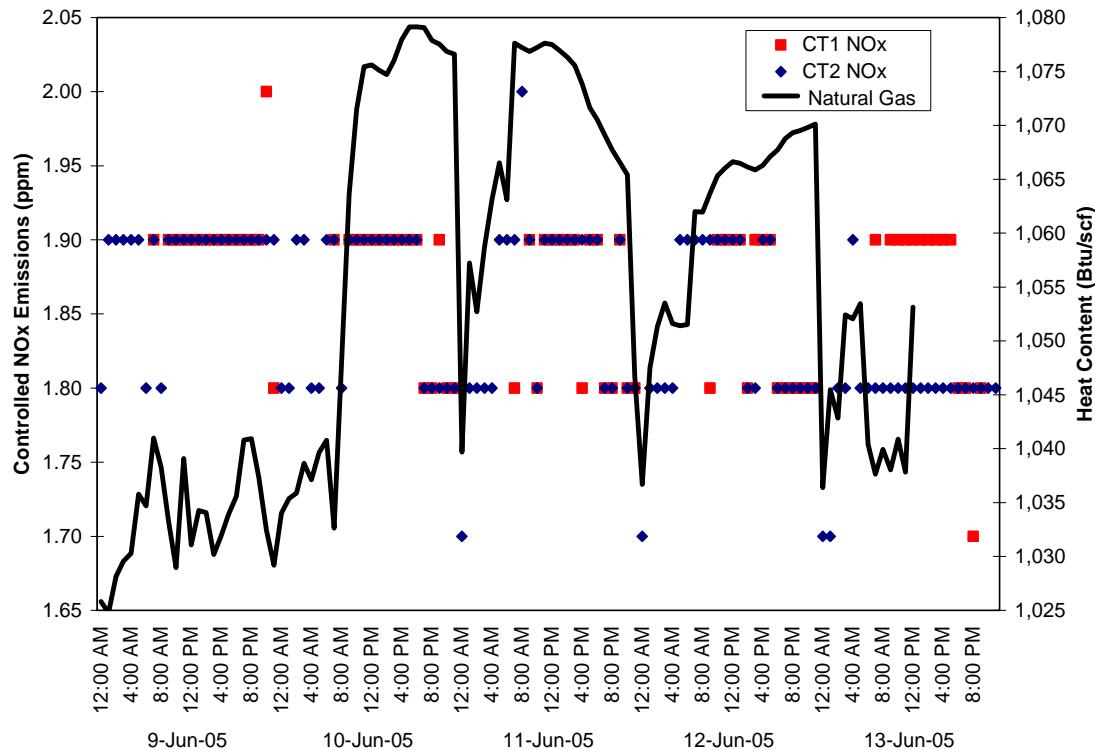


Figure 4-14, below (NOx shown @15% O₂), shows that the NOx control system was able to compensate for probable increases in pre-SCR NOx due to the higher natural gas heat content. However, it also shows that the Turbine 2 system was slow in compensating for the three rapid decreases in heat content when Delta blended gas was fired and this caused unusually low NOx concentrations coincident with the rapid drop in natural gas heat content.

In summary, the increased heat content caused a small increase in the ammonia injection rate for the LMEC gas turbine NOx control systems, and this increase allowed controlled NOx levels to be maintained.

Figure 4-14: LMEC Turbines Controlled NOx Emissions and Natural Gas Heat Content

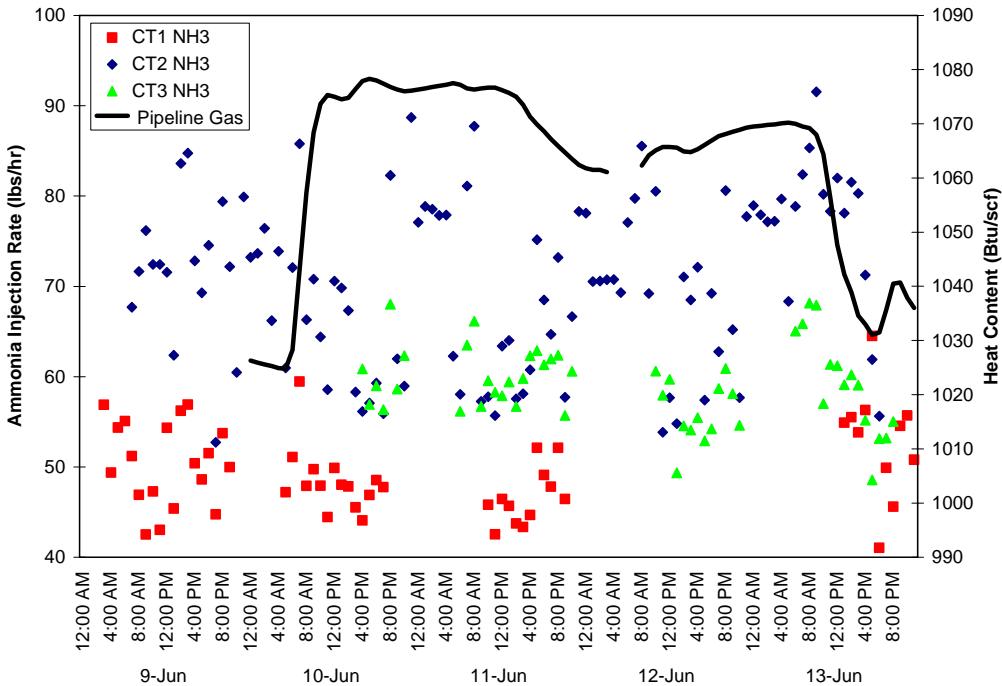


Delta

Due to an equipment problem, the data obtained for Delta did not include as-fired natural gas heat content data. Delta uses a blended natural gas fuel, so the heat content cannot be readily predicted and therefore, the effects of the heat content excursion cannot be readily determined. Additionally, similar to LMEC, any effects on the Delta gas turbines would have been difficult to determine due to the extreme load fluctuations that occurred during the period of the excursion event, and the fact that pre-SCR NOx concentrations are not available. However, it can be reasonably assumed that the effects on the Delta gas turbines would have been minimized by the blended fuel source.

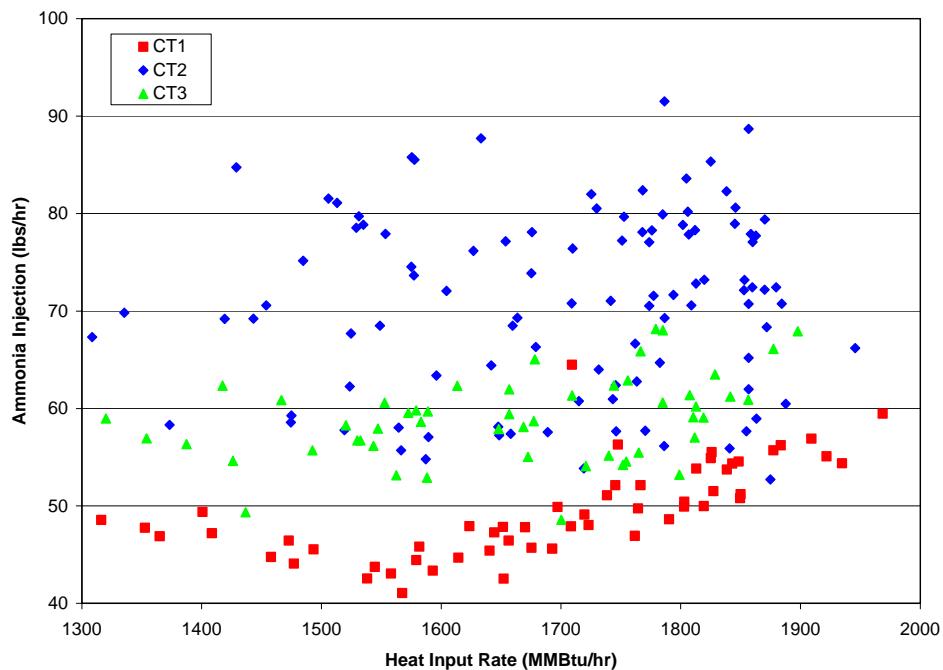
For information purposes, the ammonia injection rate over the period of the excursion event, the ammonia injection rate versus input heat rate data, and the NOx emission concentrations during the period for all three turbines are provided in Figures 4-15 through 4-17, respectively. The corresponding PG&E pipeline natural gas Wobbe index data are also shown on Figures 4-15 and 4-17 to provide an indicator when the blended fuel source would likely have experienced increases in heat content/Wobbe index. The turbine operating data shown are for normal operations excluding startup hours.

Figure 4-15: Delta Gas Turbines Ammonia Consumption



No significant pattern of increased ammonia injection rates can be reliably determined for the Delta turbines with the exception of ammonia injection versus heat input rate as shown in Figure 4-16. Figure 4-16 shows that, as expected, ammonia inject rates increase with increased turbine heat input load.

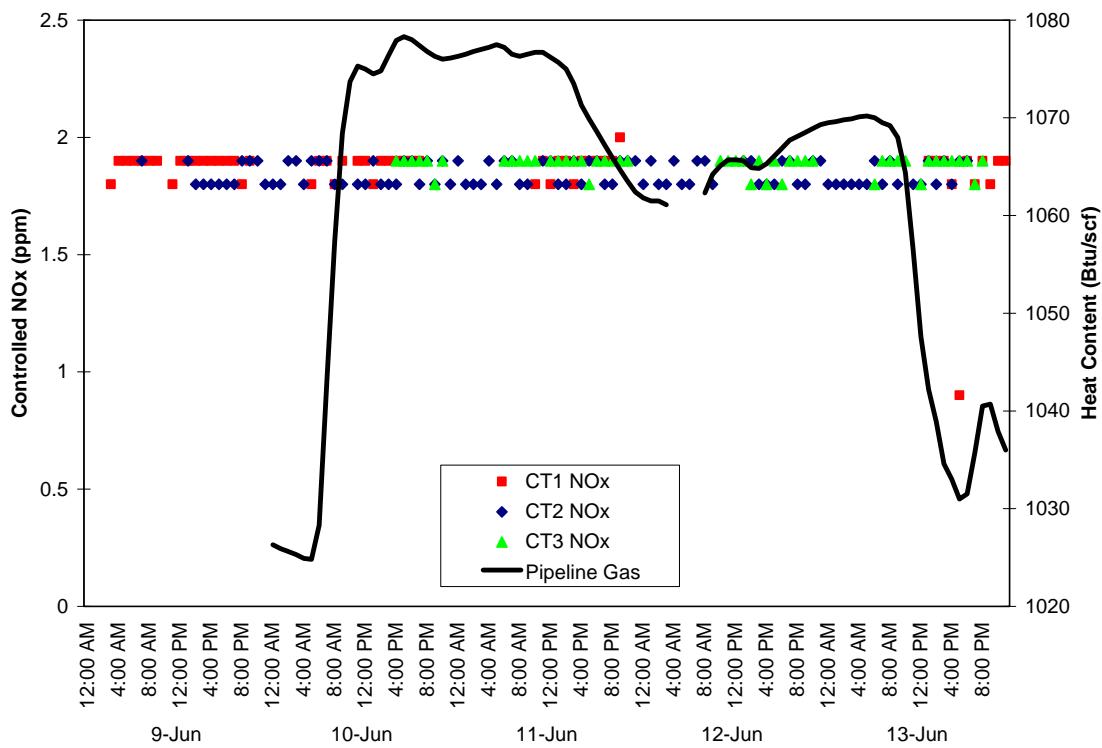
Figure 4-16: Delta Gas Turbines Ammonia Injection Rates versus Heat Input Rate



Figures 4-15 and 4-16 both show that the three Delta turbines have extremely different ammonia injection rates with Turbine 2 having rates that are on average more than 50 percent higher than Turbine 1, while Turbine 3 level ammonia injection rates fall between these two other turbines.

As can be seen in Figure 4-17, the NOx emissions (@15% O₂) are very consistent during the excursion period and it appears that the NOx control system adjusted as necessary to compensate for any effects of the increased heat content/Wobbe index of the natural gas fuel.

Figure 4-17: Delta Gas Turbines NOx Emissions



In summary, no pattern of any discernable effect of the natural gas excursion on the Delta gas turbines was discovered; however, that may be due to the amount and type of data that were available for the excursion event period.

CHAPTER 5: OTHER VARIABLE HEAT CONTENT EFFECTS DATA

The Midway Sunset facility has provided data (not related to the above excursion event) showing the effects of a decrease in natural gas heat content on carbon monoxide emissions from GE 7001E Frame turbines.⁹ The local fuel source for the Midway Sunset facility, the Elk Hills Naval Reserve, is normally a relatively high heat content natural gas (~1100 Btu/scf). The collected data are provided in Appendix A. Figures 5-1 and 5-2 show the carbon monoxide (CO) emissions for the Midway Sunset turbine as a function of natural gas heat content and Wobbe index, respectively, before and after an expensive burner modification to allow greater fuel input flexibility. These figures also provide data for a second gas turbine that underwent additional modifications after the initial burner modification to correct the CO response issue. These turbines do not have oxidation catalysts to control the exhaust CO emissions.

For this cogeneration facility, the CO emissions concentration limit was permitted at 25 ppm. It should be noted that current permitted carbon monoxide emission limits for natural gas fired 7E turbines in the Central Valley would be expected to be around 2 to 6 ppm, and that at this regulatory level CO catalysts are generally not needed to ensure compliance during normal operations.

Figure 5-1: Midway Sunset CO Emissions versus Fuel Heat Content

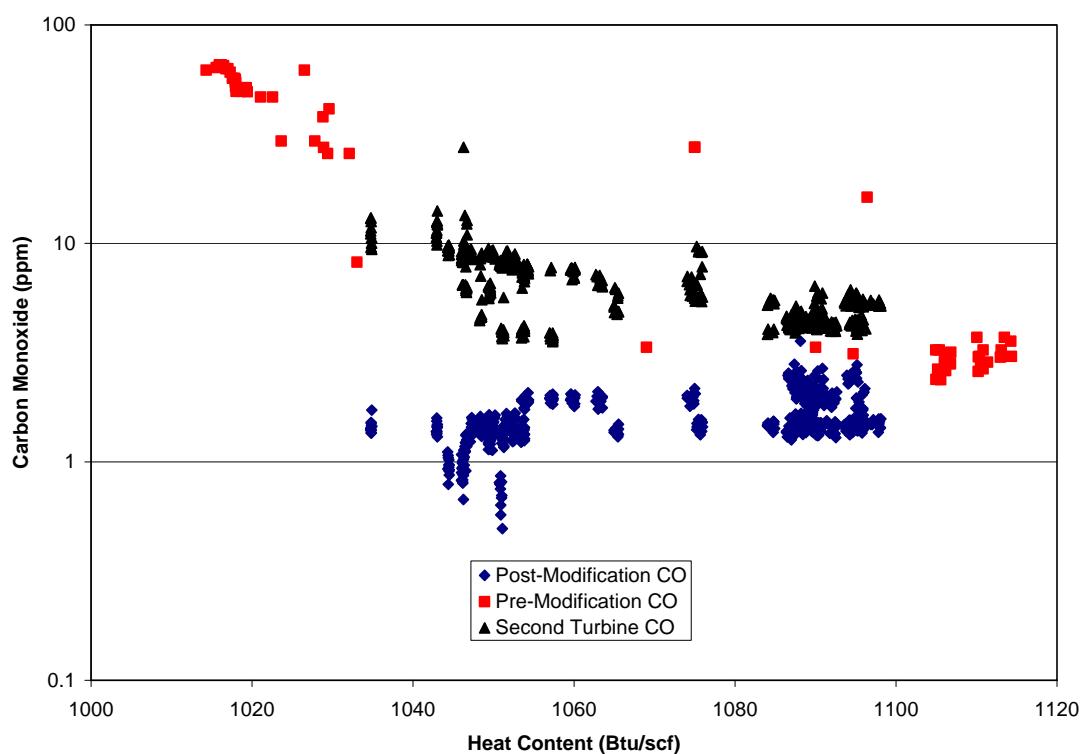
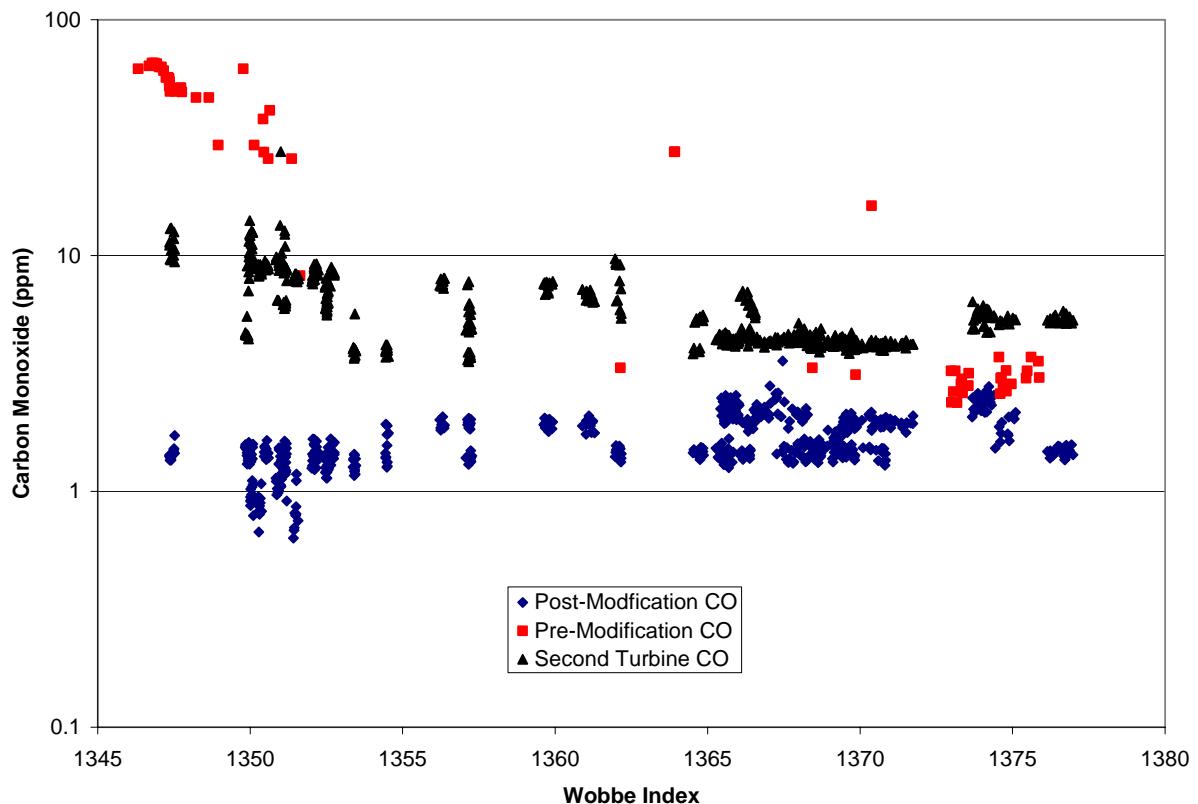


Figure 5-1: Midway Sunset CO Emissions versus Wobbe Index



The pre-modification emissions/heat content data are from May 24, 2001, and the post-modification and second turbine emissions/heat content data are from May 9, 2005.

The carbon monoxide emissions prior to the burner modification dramatically increased as fuel heat content decreased, and the second turbine shows a similar though less dramatic response with reduced fuel heat content. The dramatic response is attributed to the specific Dry Lo-NOx (DLN) burner. The Unit A turbine originally had 15 ppm NOx combustor liners, and the unit operated at 10 to 12 ppm NOx and 0 to 1.5 ppm CO with little effect with fuel Btu changes. The Midway-Sunset operator suggests, based on his experience, that combustor liners with lower NOx guarantees (that is, 9 ppm liners) have a higher sensitivity to fuel variation. The problems with significant CO emission response with Btu changes occurred after replacing the 15 ppm NOx combustor liner with a 9 ppm NOx model. It was the 9 ppm NOx combustor liner that required the additional combustor modifications to reduce CO levels to levels that complied with their permit conditions. After Midway Sunset completed the costly additional combustor modifications, the 9 ppm NOx combustor liner is now able to adjust more effectively and maintain proper combustion when the fuel heat content decreases from the normally high levels.

While the CO emissions were significantly affected due to the reduction in fuel heat content, there was a negligible effect on the Midway Sunset controlled NOx emissions. However, the Midway Sunset operator noted that, while counterintuitive due to the complexities in burner design and operation, it is possible that the NOx emissions could actually increase in certain cases when fuel heat content is reduced.

Figures 5-1 and 5-2 show that burners designed to allow a greater range in fuel composition can ensure low emissions over a wide range of natural gas fuel compositions. In fact, the post-modification burner, excepting for a few outlier data points, now results in lower carbon monoxide emissions than the pre-modified burner under all fuel heat content conditions within the range of the natural gas data provided. However, additional hot gas path component modifications, as experienced by the second turbine, can cause the CO emission reductions gained by these burner emissions modifications to be partially negated.

CHAPTER 6: OTHER STUDY FINDINGS/OTHER CONSIDERATIONS

Other Study Findings

Other studies performed by Southern California Gas Company (SoCalGas) and the South Coast Air Quality Management District (SCAQMD), among others, have looked at the effects of increasing natural gas heat content. The principal focus of all of these studies was to determine the effect of increased heat content on NOx emissions. A short summary of the findings of these other studies is provided in Table 6-1.

Table 6-1: Other Natural Gas Heat Content Study Finding Summary

Study Source	Equipment	Summary of Findings
SCAQMD	Microturbine	NOx increases with heat content increase (20 percent increase when Btu increases from 1020 to 1140 Btu/scf)
SCAQMD	Commercial Boiler	NOx increases with heat content increase (Max increase 17 percent)
SRI	Lean Burn Engine	Significant NOx increase with heat content increase (more than doubled for engine without air-to-fuel ratio controller, and 35 percent increase with controller)
SoCalGas	Residential furnaces	Little or no increase in NOx concentration with increased heat content
SoCalGas	Residential water heaters	Little or no increase in NOx concentration with increased heat content
SoCalGas	Natural Draft Burners	Little or no increase in NOx concentration with increased heat content
SoCalGas	Charbroiler	NOx increases with heat content increase (Max increase 41 percent)
SoCalGas	Deep Fat Fryer	NOx increases with heat content increase (Max increase 38 percent)
SoCalGas	Instant Water Heater	NOx increases with heat content increase (Max increase 15 percent)
SoCalGas	Pool Heater	NOx increases with heat content increase (Max increase 61 percent)
SoCalGas	Condensing Hot Water Boiler	NOx increases with heat content increase (Max increase 143 percent)
SoCalGas	Lo-NOx Hot Water Boiler	NOx increases with heat content increase (Max increase 169 percent)
SoCalGas	Lo-NOx Steam Boiler	NOx increases with heat content increase (Max increase 134 percent)
SoCalGas	Ultra Lo-NOx Steam Boiler	NOx increases with heat content increase (Max increase 50 percent)

Source: SCAQMD¹⁰

SCAQMD – South Coast Air Quality Management District

SRI – Southern Research Institute

The increased NOx values observed in many of these other tests were higher than observed at the large gas turbines in this study; however, the range of natural gas heat content in the other studies was also greater. A general conclusion that can be made from these other studies is that smaller external combustion burners that do not have high flame or combustion zone temperatures are less affected by heat content or Wobbe index than those burners that do have higher flame or combustion zone temperatures. Also, it can be generally concluded, using the former tests and the information from this report, that turbine type internal combustion engines are less affected by heat content/Wobbe index than piston type internal combustion engines. Considering the time and temperature requirements for the formation of thermal NOx, this finding is not surprising, but it is interesting that significant increases in NOx formation were found for some small external fired sources (pool heaters, charbroilers, and deep fat fryers, see Table 6-1).

It is important to note that these other studies are based on controlled tests. It is unlikely that there would be a cost effective way to perform such controlled tests with actual real-world operating power turbines and other large gas-fired power production facilities, since the amount of fuel necessary to perform such an experiment would be problematic to handle and transport, and it would be difficult for power plant operators to control operations to meet the objectives of such a controlled test.

CHAPTER 7: DATA LIMITATIONS

The analyses and conclusions presented in this report are limited by the available data and the context under which the data were gathered. This study is not purported to be a controlled experiment, nor is it meant to provide conclusive findings on the impacts of natural gas heat content on all large gas turbines for natural gas quality policy or regulatory determinations. Rather, this study is meant to provide initial data and findings regarding the effects of a single natural gas Btu content excursion event.

Since this was not a controlled experiment, both the gas Btu content and turbine operations were variable during the June 10 through June 13 excursion period. Additionally, not all desired data were available from all of the facilities included in this study. In the case of the Delta Energy Center, the heat content of the fuel used was not available so the operational/emissions data could not be meaningfully processed. In other cases, such as Sutter and Los Medanos, only short periods representing a few hours over the three-day period were considered to be useful or comparable for the determination of the effects of the heat content excursion. Therefore, the quality of the data are somewhat compromised based on the short-term nature of the event and the operational variability encountered at the facilities providing data.

No direct emission comparison can be made between separate facility gas turbines, both within the same facility or in another facility. The turbine and emission control technologies designs, including the combustor liner designs, are not all consistent between the facilities included in this study, the operations of each facility are variable from one another, and each gas turbine unit in each facility undergoes physically separate tuning events at different intervals. Therefore, the specific effects of the heat content excursion are analyzed separately for each turbine. However, observations of the general trends between comparable turbines have been provided.

CHAPTER 8: CONCLUSIONS

The gas turbine data collected indicate that the 2 percent to 5 percent increase in natural gas heat content observed at the facilities studied during the excursion event caused a minor increase in pre-SCONoX/SCR NOx emissions and ammonia consumption rates for facilities with SCR NOx controls. However, the controlled NOx emissions did not show such a trend, so it appears that the NOx controls (both SCR and SCONoX) were able to compensate under the range of natural gas compositions encountered during the excursion event.

The amount of data, number of facilities, types of facilities, and emission controls covered by this study were extremely limited and only represent a small fraction of the total natural gas power production facilities within California. Currently, the majority of natural gas-fired power plant emissions in California come from cogeneration and boiler facilities. Therefore, it is recommended that data from additional facilities (boilers, simple cycle turbines, cogeneration facilities, etc.) be gathered to determine if the effects observed during this study are representative of the facility types included in the study, if similar effects would occur for other technologies and emission controls, and if these effects could cause cumulatively significant impacts in exhaust emission levels.

It is recommended that natural gas data collected have sufficient information (specific gravity or full composition data) to enable the calculation of the Wobbe index. It is desirable to establish relationships between fuel Wobbe index and emissions and other operation variables in order to help guide future natural gas policy decisions.

It is also recommended that effects on fuel efficiency and greenhouse gas emissions from higher heat content natural gases also be included as future study objectives.

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- ³ Calpine Corporation. Natural Gas Composition Data and Sutter Facility Gas Turbine Performance Data (June 9 to June 14). Provided by Diane Tullos. June and August 2005.
- ⁴ Calpine Corporation. Natural Gas Composition Data and LMEC Facility Gas Turbine Performance Data (various dates from June 6 to June 13). Provided by David Zeiger. June 2005.
- ⁵ Calpine Corporation. Natural Gas Composition Data and Delta Facility Gas Turbine Performance Data (various dates from June 6 to June 13). Provided by David Zeiger. June 2005.
- ⁶ Pacific Gas & Electric Company. Rule No. 21 – Transportation of Natural Gas, last revised April 2005.
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- ⁸ United States Environmental Protection Agency. Standards of Performance for Stationary Gas Turbines. 40 CFR Part 60 Subpart GG Section 60.331(u). Amended July 8, 2004.
- ⁹ Midway Sunset Cogeneration Company. Natural Gas Heat Content, Gas Turbine Carbon Monoxide Emissions Data and Additional Facility Description Information. Provided by Greg Jans. June, August, and September 2005.
- ¹⁰ South Coast Air Quality Management District. Natural Gas Quality and Air Quality. Presented by Chung S. Liu, Deputy Executive Director, at the California Public Utilities Commission/California Energy Commission Workshop on Natural Gas Quality. February 2005.

APPENDIX A
DATA SUMMARY

Appendix A - Data Notes

General Notes

1. The raw data shown are as provided to the Energy Commission. The only manipulation was conversion into spreadsheet format and hourly averages when other time frames were provided.
2. Calculated values, such as fuel Wobbe index, are shown in red.
3. Data not provided or missing are left blank, while data provided as "NA" or in other similar formats, were left in those formats.

Sutter Turbine Data Notes

1. Sutter has two turbines
2. Sutter steam augmentation data was provided; however, no steam augmentation were performed for either turbine during the data period so those data are not presented.
3. Sutter duct firing data is only provided for CT1. CT2 had no duct firing during the period.

Sutter Fuel Data Notes

1. Sutter uses a mixed fuel source: the PG&E pipeline gas and Calpine-owned gas that has low Btu content.

Redding Data Notes

1. Redding uses fuel directly from the PG&E pipeline.
2. The data provided for Redding starts on June 8th for the natural gas data, and June 9th for the turbine operation data.
3. The Redding fuel heat content data were converted into an hourly average value.

Los Medanos Data Notes

1. Los Medanos has two turbines
2. Los Medanos can use a mixed fuel source: the PG&E pipeline gas and Calpine-owned gas that is mixed at the Delta facility.
3. The data provided for Los Medanos start half way through June 6th for the natural gas data, and June 9th for the turbine operation data.
4. The Los Medanos turbine MW, turbine exhaust temperature, and turbine heat rate data were converted into an hourly average values.

Delta Data Notes

1. Delta has three turbines
2. Delta uses a mixed fuel source; however, the data for the as-used fuel were not available during the surge event.
3. The Delta CT2 turbine MW, turbine exhaust temperature, and turbine heat rate data were converted into an hourly average values. Similar data for CT1 and CT3 were not provided.

Delta PG&E Natural Gas Data Notes

1. These data are for the pipeline natural gas and do not correspond to the Delta turbine fuel.

Midway Sunset Data Notes

1. The data presented are for two different time periods, and the second time period has data from two turbines. These data are not for the PG&E pipeline event covered by the other data.
2. The Wobbe index values are calculated
3. Unit A combustor was modified between the first and second period, as was the Unit X combustor; however, the Unit X combustor had additional modifications performed as well.

Table A-1 Sutter Fuel Data

Day	Hour	Turbine Fuel Data							Wobbe
		Heat Content Btu/scf	Specific Gravity	Composition Data (%)					
		Methane	Ethane	Butane	Propane	Nitrogen			
9-Jun-05	0:00:00	987	0.570	96.8	0.22	0	0.01	2.82	1307
	1:00:00	985	0.569	96.8	0.14	0.00	0.01	2.92	1307
	2:00:00	985	0.569	96.8	0.18	0.00	0.01	2.96	1306
	3:00:00	985	0.569	96.8	0.15	0.00	0.01	2.98	1306
	4:00:00	983	0.569	96.6	0.15	0.00	0.01	3.13	1303
	5:00:00	979	0.571	96.2	0.18	0.00	0.01	3.54	1296
	6:00:00	983	0.569	96.6	0.16	0.00	0.01	3.12	1303
	7:00:00	986	0.569	96.8	0.20	0.00	0.01	2.86	1308
	8:00:00	980	0.571	96.3	0.16	0.00	0.01	3.48	1297
	9:00:00	985	0.568	96.9	0.13	0.00	0.00	2.89	1307
	10:00:00	987	0.568	97.0	0.16	0.00	0.00	2.71	1310
	11:00:00	987	0.568	97.0	0.18	0.00	0.00	2.77	1309
	12:00:00	986	0.568	96.9	0.15	0.00	0.01	2.84	1308
	13:00:00	986	0.568	96.9	0.16	0.00	0.00	2.82	1308
	14:00:00	986	0.568	96.9	0.18	0.00	0.01	2.82	1309
	15:00:00	987	0.568	97.0	0.16	0.00	0.01	2.74	1310
	16:00:00	992	0.566	97.5	0.15	0.00	0.01	2.28	1318
	17:00:00	989	0.567	97.2	0.15	0.00	0.01	2.60	1313
	18:00:00	990	0.567	97.3	0.17	0.00	0.01	2.47	1315
	19:00:00	993	0.566	97.5	0.20	0.00	0.00	2.19	1320
	20:00:00	992	0.566	97.5	0.17	0.00	0.01	2.24	1319
	21:00:00		0.567	97.3	0.16	0.00	0.01	2.42	
	22:00:00	989	0.568	97.0	0.24	0.00	0.02	2.66	1312
	23:00:00	995	0.572	96.5	0.66	0.02	0.12	2.52	1316
10-Jun-05	0:00:00	995	0.570	96.5	0.67	0.02	0.12	2.49	1318
	1:00:00	995	0.572	96.5	0.67	0.02	0.12	2.49	1316
	2:00:00	996	0.572	96.5	0.67	0.02	0.12	2.49	1316
	3:00:00	996	0.572	96.5	0.68	0.02	0.12	2.49	1316
	4:00:00	996	0.572	96.5	0.68	0.02	0.12	2.49	1316
	5:00:00	998	0.573	96.4	0.77	0.02	0.14	2.38	1318
	6:00:00	998	0.573	96.4	0.81	0.02	0.14	2.41	1318
	7:00:00	997	0.573	96.4	0.76	0.02		2.46	1317
	8:00:00	992	0.571	96.6	0.51	0.01	0.07	2.60	1313
	9:00:00	995	0.572	96.5	0.64	0.02	0.10	2.52	1315
	10:00:00	997	0.573	96.4	0.74	0.02	0.13	2.44	1317
	11:00:00	994	0.572	96.5	0.62	0.01	0.10	2.59	1314
	12:00:00	981	0.570	96.4	0.14	0.00	0.01	3.32	1299
	13:00:00	981	0.570	96.5	0.13	0.00	0.00	3.29	1300
	14:00:00	985	0.568	96.9	0.14	0.00	0.00	2.90	1307
	15:00:00	987	0.568	96.9	0.19	0.00	0.01	2.83	1309
	16:00:00	990	0.567	97.3	0.17	0.00	0.01	2.47	1315
	17:00:00	988	0.567	97.1	0.16	0.00	0.00	2.62	1312
	18:00:00	989	0.567	97.1	0.17	0.00	0.00	2.61	1312
	19:00:00	989	0.567	97.2	0.15	0.00	0.01	2.54	1314
	20:00:00	988	0.568	97.1	0.17	0.00	0.01	2.67	1311
	21:00:00	988	0.568	96.9	0.21	0.00	0.01	2.75	1310
	22:00:00	993	0.569	97.0	0.39	0.01	0.04	2.42	1317
	23:00:00	1017	0.583	95.1	1.89	0.06	0.50	2.03	1332

Table A-1 Sutter Fuel Data

Day	Hour	Turbine Fuel Data							Wobbe
		Heat Content Btu/scf	Specific Gravity	Composition Data (%)					
		Methane	Ethane	Butane	Propane	Nitrogen			
11-Jun-05	0:00:00	1019	0.580	94.9	2.02	0.06	0.54	2.00	1338
	1:00:00	1019	0.584	94.9	2.02	0.06	0.54	2.00	1333
	2:00:00	1019	0.584	94.9	2.03	0.06	0.54	2.00	1333
	3:00:00	1019	0.585	94.9	2.06	0.06	0.54	2.00	1333
	4:00:00	1020	0.585	94.9	2.06	0.06	0.55	1.99	1333
	5:00:00	1023	0.587	94.6	2.28	0.07	0.61	1.94	1335
	6:00:00	1033	0.593	93.7	2.90	0.09	0.80	1.84	1341
	7:00:00	1030	0.591	94.0	2.70	0.09	0.75	1.92	1339
	8:00:00	1026	0.590	94.1	2.54	0.08	0.70	2.04	1336
	9:00:00	1020	0.586	94.6	2.12	0.07	0.58	2.14	1332
	10:00:00	1018	0.585	94.8	2.01	0.06	0.55	2.18	1330
	11:00:00	1002	0.577	95.8	1.11	0.03	0.28	2.55	1319
	12:00:00	986	0.568	97.0	0.12	0.00	0.00	2.83	1308
	13:00:00	989	0.567	97.2	0.15	0.00	0.00	2.57	1313
	14:00:00	988	0.568	97.1	0.14	0.00	0.00	2.69	1311
	15:00:00	986	0.568	96.9	0.15	0.00	0.01	2.86	1308
	16:00:00	987	0.568	97.0	0.15	0.00	0.00	2.75	1310
	17:00:00	987	0.568	97.0	0.17	0.00	0.01	2.75	1310
	18:00:00	1010	0.580	95.3	1.54	0.05	0.41	2.22	1326
	19:00:00	1045	0.601	92.7	3.68	0.12	1.01	1.67	1348
	20:00:00	1040	0.597	93.3	3.29	0.11	0.89	1.66	1345
	21:00:00	1036	0.595	93.6	3.09	0.11	0.83	1.63	1343
	22:00:00	1045			3.62	0.13	0.98		
	23:00:00								
12-Jun-05	0:00:00	1017	0.590	94.3	2.13	0.07	0.57	2.43	1324
	1:00:00	994	0.582	94.7	1.21	0.04	0.31	3.48	1303
	2:00:00	997	0.583	94.5	1.36	0.04	0.36	3.36	1306
	3:00:00	996	0.583	94.6	1.31	0.04	0.34	3.42	1304
	4:00:00	995	0.583	94.6	1.25	0.04	0.33	3.47	1303
	5:00:00	994	0.582	94.6	1.22	0.04	0.32	3.50	1303
	6:00:00	994	0.582	94.6	1.21	0.04	0.32	3.51	1302
	7:00:00	994	0.582	94.6	1.20	0.04	0.31	3.51	1302
	8:00:00	994	0.582	94.6	1.22	0.04	0.32	3.50	1303
	9:00:00	994	0.582	94.6	1.21	0.04	0.32	3.51	1302
	10:00:00	994	0.582	94.6	1.20	0.04	0.32	3.52	1302
	11:00:00	994	0.582	94.6	1.20	0.04	0.32	3.52	1302
	12:00:00	994	0.582	94.6	1.19	0.04	0.31	3.51	1302
	13:00:00	994	0.582	94.6	1.20	0.04	0.31	3.51	1302
	14:00:00	994	0.582	94.6	1.20	0.04	0.31	3.51	1302
	15:00:00	994	0.582	94.6	1.21	0.04	0.31	3.51	1302
	16:00:00	994	0.582	94.6	1.20	0.04	0.31	3.51	1302
	17:00:00	994	0.582	94.7	1.19	0.04	0.31	3.51	1302
	18:00:00	994	0.582	94.7	1.19	0.04	0.31	3.51	1302
	19:00:00	994	0.582	94.7	1.19	0.04	0.31	3.51	1302
	20:00:00	994	0.582	94.7	1.19	0.04	0.31	3.51	1302
	21:00:00	994	0.582	94.6	1.19	0.04	0.31	3.51	1302
	22:00:00	994	0.582	94.6	1.20	0.04	0.31	3.51	1302
	23:00:00	994	0.582	94.6	1.20	0.04	0.31	3.51	1302

Table A-1 Sutter Fuel Data

Day	Hour	Heat Content Btu/scf	Specific Gravity	Turbine Fuel Data					Wobbe
				Methane	Ethane	Butane	Propane	Nitrogen	
13-Jun-05	0:00:00	994	0.580	94.6	1.21	0.06	0.32	3.50	1305
	1:00:00	994	0.582	94.6	1.21	0.06	0.32	3.49	1303
	2:00:00	994	0.582	94.6	1.23	0.06	0.32	3.48	1303
	3:00:00	994	0.583	94.6	1.25	0.06	0.32	3.48	1303
	4:00:00	995	0.583	95.0	1.10	0.05	0.28	3.26	1303
	5:00:00	1000	0.580	96.0	0.97	0.04	0.24	2.49	1313
	6:00:00	1011	0.576	95.0	1.67	0.08	0.44	2.40	1332
	7:00:00	999	0.583	95.7	1.02	0.04	0.26	2.73	1308
	8:00:00	983	0.577	96.4	0.22	0.01	0.03	3.21	1294
	9:00:00	984	0.571	96.7	0.13	0.00	0.00	3.05	1302
	10:00:00	985	0.569	96.8	0.14	0.00	0.00	2.93	1306
	11:00:00	985	0.569	96.8	0.17	0.00	0.00	2.92	1307
	12:00:00	985	0.569	96.8	0.13	0.00	0.00	2.93	1306
	13:00:00	1015	0.569	95.6	1.63	0.08	0.36	1.84	1346
	14:00:00	1018	0.580	95.6	1.79	0.09	0.39	1.67	1337
	15:00:00	1020	0.581	95.4	1.85	0.10	0.43	1.70	1338
	16:00:00	1024	0.582	95.1	2.15	0.11	0.51	1.61	1343
	17:00:00	1032	0.585	94.6	2.57	0.13	0.62	1.40	1349
	18:00:00	1029	0.588	94.9	2.39	0.12	0.55	1.38	1342
	19:00:00	1022	0.586	95.4	1.99	0.10	0.44	1.55	1335
	20:00:00	1018	0.583	95.6	1.78	0.09	0.37	1.65	1334
	21:00:00	1022	0.581	95.8	1.84	0.10	0.38	1.39	1341
	22:00:00	1022	0.581	95.8	1.84	0.10	0.38	1.33	1341
	23:00:00	1022	0.580	95.9	1.83	0.10	0.37	1.33	1342
14-Jun-05	0:00:00	1022	0.580	95.9	1.83	0.10	0.38	1.31	1342
	1:00:00	1022	0.580	95.9	1.84	0.10	0.38	1.31	1342
	2:00:00	1022	0.580	95.9	1.84	0.10	0.38	1.31	1342
	3:00:00	1022	0.580	95.9	1.84	0.10	0.38	1.31	1342
	4:00:00	1022	0.580	95.9	1.83	0.10	0.38	1.32	1342
	5:00:00	1021	0.580	95.9	1.79	0.10	0.37	1.35	1341
	6:00:00	1015	0.580	96.0	1.53	0.08	0.31	1.63	1333
	7:00:00	1008	0.578	96.1	1.26	0.07	0.26	2.00	1326
	8:00:00	993	0.577	96.5	0.58	0.03	0.10	2.65	1308
	9:00:00	986	0.572	97.0	0.13	0.00	0.00	2.81	1304
	10:00:00	988	0.568	97.1	0.13	0.00	0.00	2.65	1311
	11:00:00	990	0.567	96.9	0.30	0.01	0.03	2.63	1314
	12:00:00	1017	0.569	96.0	1.61	0.08	0.32	1.48	1349
	13:00:00	1018	0.578	95.6	1.83	0.08	0.34	1.54	1338
	14:00:00	1016	0.581	95.7	1.74	0.08	0.33	1.61	1333
	15:00:00	1016	0.581	95.6	1.76	0.08	0.35	1.64	1334
	16:00:00	1017	0.581	95.6	1.80	0.09	0.35	1.64	1334
	17:00:00	1017	0.581	95.4	1.91	0.08	0.35	1.64	1334
	18:00:00	1018	0.582	95.3	1.98	0.08	0.35	1.61	1334
	19:00:00	1018	0.583	95.3	2.01	0.08	0.35	1.57	1334
	20:00:00	1017	0.583	95.4	1.97	0.08	0.34	1.58	1333
	21:00:00	1017	0.582	95.5	1.92	0.08	0.33	1.57	1333
	22:00:00	1015	0.582	95.6	1.77	0.07	0.31	1.62	1331
	23:00:00	1015	0.581	95.7	1.75	0.07	0.31	1.62	1332

Table A-2 Sutter Turbine Data

Day	Hour	CT01 GT Gas Flow klbs	CT01 GT Gas On-Time	CT01 GT Heat Input MMBtu/hr	CT01 Duct Burner Flow klbs	CT01 Burner On-Time	CT01 DB Heat Input mmBtu	CT01 NH3 Flow lbs	CT01 SCR Cat Temp °F	CT01 GT Megawatts	CT01 Process Status	CT01 O2%	CT01 NOx ppm @15% O2	CT01 NOx	CT01 CO ppm @15% O2	CT01 CO lbs	CT01 lb/mmBtu	CT01 CO lbs	CT01 3-Hr Rolling CO lbs	CT01 SCR NOx ppm	CT01 Process Status	CT01 Exhaus- ing Temp °F	
													NOx lbs	CO ppm									
9-Jun-05	0:00	Down	0.00	Down	Down	0.00	Down	0.00	168.3	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	88	
	1:00	Down	0.00	Down	Down	0.00	Down	0.00	173.9	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	89	
	2:00	Down	0.00	Down	Down	0.00	Down	0.00	177.2	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	90	
	3:00	Down	0.00	Down	Down	0.00	Down	0.00	177.7	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	91	
	4:00	Down	0.00	Down	Down	0.00	Down	0.00	179.7	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	92	
	5:00	Down	0.00	Down	Down	0.00	Down	0.00	210.5	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	92	
	6:00	Down	0.00	Down	Down	0.00	Down	0.00	217.4	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	91	
	7:00	Down	0.00	Down	Down	0.00	Down	0.00	224.4	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	91	
	8:00	Down	0.00	Down	Down	0.00	Down	0.00	232.1	Normal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	Normal	93	
	9:00	Down	0.00	Down	Down	0.00	Down	0.00	236.9	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	93	
	10:00	Down	0.00	Down	Down	0.00	Down	0.00	238.2	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	94	
	11:00	Down	0.00	Down	Down	0.00	Down	0.00	241.4	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	97	
	12:00	Down	0.00	Down	Down	0.00	Down	0.00	245.2	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	103	
	13:00	Down	0.00	Down	Down	0.00	Down	0.00	247.0	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	117	
	14:00	Down	0.00	Down	Down	0.00	Down	0.00	248.8	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	117	
	15:00	Down	0.00	Down	Down	0.00	Down	0.00	250.0	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	120	
	16:00	Down	0.00	Down	Down	0.00	Down	0.00	249.9	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	125	
	17:00	Down	0.00	Down	Down	0.00	Down	0.00	250.7	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	123	
	18:00	Down	0.00	Down	Down	0.00	Down	0.00	253.0	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	115	
	19:00	Down	0.00	Down	Down	0.00	Down	0.00	250.5	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	121	
	20:00	Down	0.00	Down	Down	0.00	Down	0.00	250.4	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	123	
	21:00	Down	0.00	Down	Down	0.00	Down	0.00	244.4	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	118	
	22:00	Down	0.00	Down	Down	0.00	Down	0.00	232.8	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	120	
	23:00	Down	0.00	Down	Down	0.00	Down	0.00	221.3	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	121	
10-Jun-05	0:00	Down	0.00	Down	Down	0.00	Down	0.00	213.4	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	105	
	1:00	Down	0.00	Down	Down	0.00	Down	0.00	206.3	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	95	
	2:00	Down	0.00	Down	Down	0.00	Down	0.00	199.6	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	94	
	3:00	Down	0.00	Down	Down	0.00	Down	0.00	199.6	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	93	
	4:00	Down	0.00	Down	Down	0.00	Down	0.00	215.2	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	94	
	5:00	Down	0.00	Down	Down	0.00	Down	0.00	219.6	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	99	
	6:00	Down	0.00	Down	Down	0.00	Down	0.00	221.2	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	96	
	7:00	Down	0.00	Down	Down	0.00	Down	0.00	224.7	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	92	
	8:00	Down	0.00	Down	Down	0.00	Down	0.00	231.0	Normal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	Normal	97	
	9:00	Down	0.00	Down	Down	0.00	Down	0.00	235.4	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	105	
	10:00	Down	0.00	Down	Down	0.00	Down	0.00	239.0	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	110	
	11:00	Down	0.00	Down	Down	0.00	Down	0.00	242.8	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	111	
	12:00	Down	0.00	Down	Down	0.00	Down	0.00	244.7	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	113	
	13:00	Down	0.00	Down	Down	0.00	Down	0.00	245.9	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	114	
	14:00	Down	0.00	Down	Down	0.00	Down	0.00	244.3	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	117	
	15:00	Down	0.00	Down	Down	0.00	Down	0.00	238.7	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	119	
	16:00	Down	0.00	Down	Down	0.00	Down	0.00	232.7	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	122	
	17:00	Down	0.00	Down	Down	0.00	Down	0.00	226.8	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	123	
	18:00	Down	0.00	Down	Down	0.00	Down	0.00	220.5	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	119	
	19:00	Down	0.00	Down	Down	0.00	Down	0.00	214.1	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	114	
	20:00	Down	0.00	Down	Down	0.00	Down	0.00	208.2	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	109	
	21:00	Down	0.00	Down	Down	0.00	Down	0.00	203.1	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	103	
	22:00	Down	0.00	Down	Down	0.00	Down	0.00	198.6	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	104	
	23:00	Down	0.00	Down	Down	0.00	Down	0.00	194.3	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	99	
11-Jun-05	0:00	Down	0.00	Down	Down	0.00	Down	0.00	191.4	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	96	
	1:00	Down	0.00	Down	Down	0.00	Down	0.00	188.7	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	93	
	2:00	Down	0.00	Down	Down	0.00	Down	0.00	186.9	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	93	
	3:00	Down	0.00	Down	Down	0.00	Down	0.00	184.4	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	96	
	4:00	Down	0.00	Down	Down	0.00	Down	0.00	182.2	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	90	
	5:00	Down	0.00	Down	Down	0.00	Down	0.00	179.8	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	90	
	6:00	Down	0.00	Down	Down	0.00	Down	0.00	177.5	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	91	
	7:00	Down	0.00	Down	Down	0.00	Down	0.00	176.5	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	92	
	8:00	Down	0.00	Down	Down	0.00	Down	0.00	177.9	Normal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	Normal	99	
	9:00	Down	0.00	Down	Down	0.00	Down	0.00	178.6	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	105	
	10:00	0.87	484	Down	0.00	Down	0.00	277.5	10.1	Startup	18.2	13.6	29.7	0.1092	52.8	389.4	850.9	1.904	920.4	Inval	21.7	47.4	
	11:00	34.5	1.00	760	Down	0.00	0.0	0.20	495.4	40.0	Startup	16.9	21.3	31.4	0.1155	87.8	33.6	49.6	0.111	84.4	Inval	35.2	51.9
	12:00	53.9	1.00	1185	Down	0.00	51.7	1.00	549.6	103.2	Startup	14.4	4.7	4.3	0.0157	18.6	0.5	0.0	0.001	1.2	33.5	24.3	22.1
	13:00	69.5	1.00	1526	Down	0.00	59.8	1.00	586.3	144.8	Normal	14.0	2.6	2.2	0.0082	12.5	0.0	0.0	0.000	0.0	28.5	22.7	19.4
	14:00	71.6	1.00	1706	Down	0.00	72.6	1.00	608.7	164.8	Normal	13.9	2.6	2.2	0.0081	13.8	0.0	0.0	0.000	0.0	0.4	23.6	19.9
	15:00	68.9	1.00	1516	Down	0.00	59.5	1.00	598.3	144.2	Normal	14.0	2.6	2.2	0.0082	12.4	0.0	0.0	0.000	0.0	0.0	21.2	18.1
	16:00	76.6	1.00	1731	Down	0.00	73.4	1.00	610.9	166.5	Normal	13.9	2.6	2.2	0.0081	14.0	0.0	0.0	0.000	0.0	0.0	23.7	20.0
	17:00	69.0	1.00	1606	Down	0.00	61.9	1.00	603.8	151.2	Normal	13.9	2.6	2.2	0.0081	13.0	0.0	0.0	0.000	0.0	0.0	22.3	18.8
	18:00	68.1	1.00	1576	Down	0.00	62.6	1.00	602.0	147.4	Normal	14.0	2.6	2.2	0.0082	12.9	0.0	0.0	0.000	0.0	0.0	22.6	19.3
	19:00	58.5	1.00	1351	Down	0.00	46.5	1.00	586.5	121.4	Normal	14.1	2.5	2									

Table A-2 Sutter Turbine Data

Day	Hour	CT01 GT Gas Flow klbs	CT01 GT Gas On-Time	CT01 GT Heat Input MMBtu/hr	CT01 Duct Burner Flow klbs	CT01 Duct Burner On-Time	CT01 DB Heat Input mmBtu	CT01 NH3 Flow lbs	CT01 NH3 Flow On-Time	CT01 SCR Cat Temp °F	CT01 GT Megawatts	CT01 Process Status	CT01 2%	CT01 NOx ppm @15% O2	CT01 NOx ppm lb/mmBtu	CT01 NOx lbs	CT01 CO ppm	CT01 CO ppm lb/mmBtu	CT01 CO lbs	CT01 3-Hr Rolling CO lbs	CT01 SCR NOx ppm	CT01 SCR NOx ppm @15% O2	CT01 Process Status	CT01 Exhaust Temp °F		
12-Jun-05	0:00	Down	0.00	Down	0.00	Down	0.00	382.5	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	114		
	1:00	Down	0.00	Down	0.00	Down	0.00	374.3	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	114		
	2:00	Down	0.00	Down	0.00	Down	0.00	363.7	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	118		
	3:00	Down	0.00	Down	0.00	Down	0.00	353.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	124		
	4:00	Down	0.00	Down	0.00	Down	0.00	346.3	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	120		
	5:00	Down	0.00	Down	0.00	Down	0.00	339.5	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	117		
	6:00	Down	0.00	Down	0.00	Down	0.00	338.1	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	116		
	7:00	Down	0.00	Down	0.00	Down	0.00	332.7	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	119		
	8:00	Down	0.00	Down	0.00	Down	0.00	327.9	Down	Normal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	Normal	126		
	9:00	Down	0.00	Down	0.00	Down	0.00	322.5	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	132		
	10:00	Down	0.00	Down	0.00	Down	0.00	310.7	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	136		
	11:00	Down	0.00	Down	0.00	Down	0.00	303.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	136		
	12:00	Down	0.00	Down	0.00	Down	0.00	297.6	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	137		
	13:00	Down	0.00	Down	0.00	Down	0.00	291.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	140		
	14:00	Down	0.00	Down	0.00	Down	0.00	284.5	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	143		
	15:00	Down	0.00	Down	0.00	Down	0.00	281.6	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	143		
	16:00	Down	0.00	Down	0.00	Down	0.00	277.4	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	142		
	17:00	Down	0.00	Down	0.00	Down	0.00	272.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	140		
	18:00	Down	0.00	Down	0.00	Down	0.00	268.3	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	135		
	19:00	Down	0.00	Down	0.00	Down	0.00	263.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	135		
	20:00	Down	0.00	Down	0.00	Down	0.00	259.7	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	133		
	21:00	Down	0.00	Down	0.00	Down	0.00	255.1	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	132		
	22:00	Down	0.00	Down	0.00	Down	0.00	250.1	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	125		
	23:00	Down	0.00	Down	0.00	Down	0.00	245.4	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	116		
13-Jun-05	0:00	Down	0.00	Down	0.00	Down	0.00	240.7	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	121		
	1:00	Down	0.00	Down	0.00	Down	0.00	235.7	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	115		
	2:00	Down	0.00	Down	0.00	Down	0.00	231.3	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	110		
	3:00	10.0	0.43	221	Down	0.00	Down	248.5	7.6	Startup	18.3	14.1	32.0	0.1176	26.0	627.7	1424.4	3.187	704.6	Inval	17.4	39.5	Startup	114		
	4:00	33.2	1.00	741	Down	0.00	Down	462.0	35.0	Startup	17.1	24.8	38.5	0.1415	104.8	38.8	60.2	0.135	100.0	Inval	34.8	54.0	Startup	145		
	5:00	36.5	1.00	822	Down	0.00	Down	529.9	50.1	Startup	16.5	26.2	35.1	0.1291	106.1	30.8	41.3	0.092	75.6	293.4	37.0	49.6	Startup	263		
	6:00	37.0	1.00	822	Down	0.00	Down	519.4	50.1	Startup	16.5	26.3	35.3	0.1296	106.6	33.0	44.3	0.099	81.4	85.7	35.3	47.3	Startup	270		
	7:00	45.1	1.00	987	Down	0.00	Down	23.9	0.80	530.9	76.1	Startup	15.6	17.1	19.0	0.0700	69.1	16.1	17.9	0.040	39.5	65.5	31.8	35.4	Startup	224
	8:00	62.9	1.00	1379	Down	0.00	Down	50.0	1.00	564.9	128.0	Normal	14.1	2.2	1.9	0.0700	9.7	0.1	0.1	0.000	0.0	40.3	20.8	18.0	Normal	215
	9:00	78.7	1.00	1727	Down	0.00	Down	82.9	1.00	605.7	167.1	Normal	13.9	2.4	2.0	0.0074	12.8	0.4	0.3	0.001	1.7	13.7	23.9	20.1	Normal	206
	10:00	80.2	1.00	1760	Down	0.00	Down	73.7	1.00	617.3	170.7	Normal	13.9	2.6	2.2	0.0081	14.3	0.2	0.2	0.000	0.0	0.6	22.8	19.2	Normal	223
	11:00	80.4	1.00	1764	Down	0.00	Down	73.8	1.00	619.7	171.3	Normal	13.8	2.5	2.1	0.0076	13.4	0.2	0.2	0.000	0.0	0.6	22.2	18.4	Normal	225
	12:00	79.1	1.00	1793	Down	0.00	Down	73.2	1.00	619.3	173.2	Normal	13.8	2.7	2.2	0.0082	14.7	0.2	0.2	0.000	0.0	0.0	22.4	18.6	Normal	225
	13:00	79.0	1.00	1792	Down	0.00	Down	74.3	1.00	619.4	172.8	Normal	13.8	2.7	2.2	0.0082	14.7	0.2	0.2	0.000	0.0	0.0	22.8	18.9	Normal	226
	14:00	78.8	1.00	1790	Down	0.00	Down	73.9	1.00	620.2	172.3	Normal	13.8	2.7	2.2	0.0082	14.7	0.2	0.2	0.000	0.0	0.0	22.8	18.9	Normal	227
	15:00	78.5	1.00	1792	Down	0.00	Down	75.5	1.00	620.7	172.2	Normal	13.8	2.7	2.2	0.0082	14.7	0.2	0.2	0.000	0.0	0.0	23.4	19.4	Normal	227
	16:00	78.2	1.00	1798	Down	0.00	Down	76.3	1.00	621.2	172.2	Normal	13.8	2.7	2.2	0.0082	14.7	0.2	0.2	0.000	0.0	0.0	23.9	19.9	Normal	228
	17:00	78.6	1.00	1802	Down	0.00	Down	71.6	1.00	621.3	173.0	Normal	13.8	2.6	2.2	0.0079	14.2	0.2	0.2	0.000	0.0	0.0	23.0	19.1	Normal	227
	18:00	78.6	1.00	1788	Down	0.00	Down	63.2	1.00	620.7	172.1	Normal	13.8	2.7	2.2	0.0082	14.7	0.2	0.2	0.000	0.0	0.0	21.2	17.6	Normal	226
	19:00	76.7	1.00	1740	Down	0.00	Down	62.3	1.00	618.3	167.0	Normal	13.8	2.7	2.2	0.0082	14.3	0.2	0.2	0.000	0.0	0.0	21.1	17.5	Normal	224
	20:00	63.6	1.00	1448	Down	0.00	Down	55.0	1.00	594.1	134.3	Normal	14.1	2.6	2.3	0.0083	12.0	0.2	0.2	0.000	0.0	0.0	20.3	17.5	Normal	223
	21:00	72.0	1.00	1639	Down	0.00	Down	76.3	1.00	580.9	155.7	Normal	13.9	2.5	2.1	0.0077	12.6	0.2	0.2	0.000	0.0	0.0	23.2	19.6	Normal	212
	22:00	52.7	1.00	1200	Down	0.00	Down	38.4	0.85	559.3	101.3	Shutdown	14.7	2.8	2.7	0.0098	11.8	7.1	6.8	0.015	18.0	6.0	20.0	19.0	Shutdown	207
	23:00	1.6	0.07	37	Down	0.00	Down	453.6	0.5	Shutdown	18.7	5.3	14.2	0.0522	1.9	29.7	79.7	0.176	6.6	8.2	17.5	46.9	Shutdown	194		
14-Jun-05	0:00	Down	0.00	Down	0.00	Down	0.00	386.5	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	162		
	1:00	Down	0.00	Down	0.00	Down	0.00	371.3	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	110		
	2:00	Down	0.00	Down	0.00	Down	0.00	363.6	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	112		
	3:00	Down	0.00	Down	0.00	Down	0.00	356.5	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	116		
	4:00	12.1	0.47	276	Down	0.00	Down	374.6	18.4	Startup	17.8	8.7	16.6	0.0609	16.8	31.9	60.7	0.136	37.5	Inval	20.2	38.4	Startup	117		
	5:00	40.8	1.00	922	Down	0.00	Down	0.2</td																		

Table A-2 Sutter Turbine Data

Day	Hour	CT02 GT Gas Flow klbs	CT02 GT Gas On-Time	CT02 GT Heat Input MMBtu/hr	CT02 NH3 Flow lbs	CT02 NH3 Flow On-Time	CT02 SCR Cat Temp °F	CT02 GT Megawatts	CT02 Process Status	CT02 02%	CT02 NOx ppm	CT02 NOx ppm @15% O2	CT02 lb/mmBtu	CT02 NOx lbs	CT02 CO ppm	CT02 CO ppm	CT02 CO	CT02 CO lbs	CT02 3-Hr Rolling CO lbs	CT02 SCR NOx ppm	CT02 SCR NOx ppm @15% O2	CT02 Process Status	CT02 Exhaust Temp °F	
9-Jun-05	0:00:00	827	1:00	0.00	540.2	50.0	Startup	16.5	23.0	30.8	0.1134	93.8	30.9	41.4	0.093	76.9	434.1	39.4	40.8	Startup	180			
	1:00:00	38.2	1:00	838	0.0	0.18	535.8	52.1	Startup	16.4	23.3	30.5	0.1123	94.1	31.9	41.8	0.094	78.7	84.7	29.7	38.9	Startup	239	
	2:00:00	44.9	1:00	983	6.4	1:00	507.2	76.2	Startup	15.5	18.2	19.9	0.0731	71.8	11.6	12.7	0.028	27.5	61.0	28.7	31.4	Startup	224	
	3:00:00	51.2	1:00	1117	178.1	1:00	526.1	93.7	Startup	14.4	3.8	3.4	0.0127	14.2	0.2	0.2	0.000	0.0	35.4	24.9	22.6	Starup	232	
	4:00:00	57.0	1:00	1248	200.0	1:00	545.9	111.5	Normal	14.1	2.1	1.8	0.0067	8.4	0.0	0.0	0.000	0.0	9.2	23.9	20.7	Normal	212	
	5:00:00	64.7	1:00	1422	113.3	1:00	567.3	134.4	Normal	13.9	2.2	1.9	0.0068	9.7	0.3	0.3	0.001	1.4	0.5	21.4	18.0	Normal	205	
	6:00:00	79.9	1:00	1742	101.8	1:00	598.8	171.0	Normal	14.0	2.3	2.0	0.0072	12.5	0.2	0.2	0.000	0.0	0.5	20.7	17.7	Normal	207	
	7:00:00	79.0	1:00	1735	72.6	1:00	602.9	171.0	Normal	14.0	2.6	2.2	0.0082	14.2	0.0	0.0	0.000	0.0	0.5	21.0	18.0	Normal	212	
	8:00:00	78.0	1:00	1715	78.0	1:00	604.1	168.4	Normal	14.0	2.6	2.2	0.0082	14.1	0.0	0.0	0.000	0.0	0.0	21.1	18.0	Normal	211	
	9:00:00	60.2	1:00	1323	102.6	1:00	582.8	120.9	Normal	14.1	2.5	2.2	0.0080	10.6	0.0	0.0	0.000	0.0	0.0	21.8	18.9	Normal	210	
	10:00:00	66.2	1:00	1454	66.2	1:00	586.0	137.7	Normal	14.0	2.4	2.1	0.0075	10.9	0.0	0.0	0.000	0.0	0.0	20.8	17.8	Normal	201	
	11:00:00	78.5	1:00	1724	70.7	1:00	603.8	169.0	Normal	14.0	2.6	2.2	0.0082	14.1	0.0	0.0	0.000	0.0	0.0	21.9	18.7	Normal	206	
	12:00:00	72.8	1:00	1599	69.3	1:00	599.5	155.4	Normal	14.0	2.6	2.2	0.0082	13.1	0.0	0.0	0.000	0.0	0.0	20.5	17.5	Normal	212	
	13:00:00	72.3	1:00	1590	69.3	1:00	599.7	154.6	Normal	14.0	2.6	2.2	0.0082	13.0	0.0	0.0	0.000	0.0	0.0	21.1	18.0	Normal	210	
	14:00:00	72.7	1:00	1606	73.0	1:00	400.7	156.5	Normal	14.0	2.6	2.2	0.0082	13.2	0.0	0.0	0.000	0.0	0.0	21.9	18.7	Normal	209	
	15:00:00	73.2	1:00	1611	72.7	1:00	601.3	156.7	Normal	14.0	2.6	2.2	0.0082	13.2	0.0	0.0	0.000	0.0	0.0	21.9	18.7	Normal	209	
	16:00:00	71.6	1:00	1579	70.2	1:00	600.8	152.9	Normal	14.0	2.6	2.2	0.0082	12.9	0.0	0.0	0.000	0.0	0.0	21.8	18.6	Normal	208	
	17:00:00	59.6	1:00	1318	71.6	1:00	583.7	120.8	Normal	14.1	2.4	2.1	0.0077	10.1	0.0	0.0	0.000	0.0	0.0	20.9	18.1	Normal	208	
	18:00:00	60.2	1:00	1330	56.9	1:00	580.9	122.5	Normal	14.1	2.5	2.2	0.0080	10.6	0.0	0.0	0.000	0.0	0.0	20.8	18.0	Normal	202	
	19:00:00	60.5	1:00	1334	55.7	1:00	580.5	122.9	Normal	14.1	2.6	2.3	0.0083	11.1	0.0	0.0	0.000	0.0	0.0	20.8	18.0	Normal	203	
	20:00:00	54.8	1:00	1207	43.6	0.87	579.5	103.7	Shutdown	14.7	2.8	2.7	0.0098	11.8	5.6	5.3	0.012	14.5	4.8	21.6	20.6	Shutdown	205	
	21:00:00	3.6	0.15	80	Down	0.00	470.7	1.9	Shutdown	18.6	5.5	14.1	0.0519	4.2	24.2	62.1	0.139	11.2	8.6	17.2	44.1	Shutdown	206	
	22:00:00	Down	0.00	Down	0.00	Down	358.2	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Inval	Down	Down	Normal	190
	23:00:00	Down	0.00	Down	0.00	Down	0.00	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Inval	Down	Down	Normal	122
10-Jun-05	0:00:00	Down	0.00	Down	0.00	Down	0.00	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	105
	1:00:00	Down	0.00	Down	0.00	Down	0.00	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	100
	2:00:00	Down	0.00	Down	0.00	Down	0.00	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	100
	3:00:00	24.8	0.90	552	Down	0.00	426.5	18.6	Startup	17.8	12.7	24.2	0.0889	49.1	29.2	55.6	0.124	68.5	Inval	21.0	40.0	Startup	100	
	4:00:00	35.5	1.00	789	Down	0.00	534.6	42.6	Startup	16.8	22.6	32.5	0.1195	94.2	33.8	48.6	0.109	86.0	Inval	29.4	42.3	Startup	236	
	5:00:00	40.7	1.00	903	5.4	0.78	514.1	63.3	Startup	16.0	22.4	27.0	0.0991	89.5	27.0	32.5	0.073	65.9	73.5	30.3	36.5	Startup	292	
	6:00:00	48.0	1.00	1060	80.7	1:00	549.9	84.9	Startup	14.8	2.9	2.8	0.0103	10.9	3.0	2.9	0.006	6.4	52.8	27.3	26.4	Startup	263	
	7:00:00	59.5	1.00	1318	112.3	1:00	568.7	120.4	Normal	14.0	2.6	2.2	0.0082	10.8	0.0	0.0	0.000	0.0	0.0	24.1	22.7	Normal	221	
	8:00:00	59.4	1.00	1318	89.9	1:00	576.1	120.2	Normal	14.1	2.5	2.2	0.0080	10.5	0.0	0.0	0.000	0.0	0.0	21.1	23.1	Normal	222	
	9:00:00	66.1	1.00	1461	68.0	1:00	586.2	138.2	Normal	13.9	2.4	2.0	0.0074	10.8	0.0	0.0	0.000	0.0	0.0	21.8	18.4	Normal	209	
	10:00:00	79.5	1.00	1736	80.6	1:00	605.6	169.3	Normal	13.9	2.7	2.3	0.0084	14.6	0.0	0.0	0.000	0.0	0.0	23.8	20.1	Normal	207	
	11:00:00	79.7	1.00	1742	91.6	1:00	610.7	169.4	Normal	13.9	2.6	2.2	0.0081	14.1	0.0	0.0	0.000	0.0	0.0	24.6	20.7	Normal	213	
	12:00:00	79.5	1.00	1745	97.7	1:00	612.8	169.4	Normal	13.9	2.6	2.2	0.0081	14.1	0.0	0.0	0.000	0.0	0.0	25.9	21.8	Normal	213	
	13:00:00	79.4	1.00	1745	91.9	1:00	612.3	170.2	Normal	13.8	2.6	2.2	0.0079	13.8	0.0	0.0	0.000	0.0	0.0	25.2	20.9	Normal	212	
	14:00:00	79.1	1.00	1744	91.9	1:00	612.5	170.5	Normal	13.9	2.6	2.2	0.0081	14.1	0.0	0.0	0.000	0.0	0.0	25.0	21.1	Normal	212	
	15:00:00	79.5	1.00	1749	93.7	1:00	613.1	170.5	Normal	13.9	2.7	2.3	0.0084	14.7	0.0	0.0	0.000	0.0	0.0	25.6	21.6	Normal	211	
	16:00:00	78.7	1.00	1732	94.6	1:00	612.9	168.8	Normal	13.8	2.6	2.2	0.0079	13.7	0.0	0.0	0.000	0.0	0.0	26.1	21.7	Normal	210	
	17:00:00	71.4	1.00	1572	75.4	1:00	603.1	152.1	Normal	13.8	2.6	2.2	0.0079	12.4	0.0	0.0	0.000	0.0	0.0	23.3	19.4	Normal	209	
	18:00:00	59.1	1.00	1300	69.6	1:00	582.9	118.6	Normal	14.1	2.6	2.3	0.0083	10.8	0.0	0.0	0.000	0.0	0.0	21.9	19.0	Normal	208	
	19:00:00	58.9	1.00	1296	59.1	1:00	576.9	118.0	Normal	14.1	2.5	2.2	0.0080	10.4	0.0	0.0	0.000	0.0	0.0	21.3	18.5	Normal	200	
	20:00:00	53.3	1.00	1180	49.9	0.87	574.9	100.9	Shutdown	14.6	2.5	2.3	0.0086	10.1	5.2	4.9	0.011	13.0	4.3	23.1	20.7	Shutdown	199	
	21:00:00	1.9	0.08	42	Down	0.00	459.8	0.0	Shutdown	18.6	3.2	8.2	0.0302	1.3	25.3	64.9	0.145	6.1	6.4	16.1	41.3	Shutdown	198	
	22:00:00	Down	0.00	Down	0.00	Down	378.3	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Inval	Down	Down	Normal	185
	23:00:00	Down	0.00	Down	0.00	Down	342.7	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Inval	Down	Down	Normal	108
11-Jun-05	0:00:00	Down	0.00	Down	0.00	Down	0.00	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	96
	1:00:00	Down	0.00	Down	0.00	Down	0.00	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	95
	2:00:00	Down	0.00	Down	0.00	Down	0.00	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	98
	3:00:00	11.0	0.45	252	Down	0.00	328.2	14.6																

Table A-2 Sutter Turbine Data

Day	Hour	CT02 GT Gas Flow klbs	CT02 GT Gas On-Time	CT02 GT Heat Input MMBtu/hr	CT02 NH3 Flow lbs	CT02 NH3 Flow On-Time	CT02 SCR Cat Temp °F	CT02 Megawatts	CT02 Process Status	CT02 02%	CT02 NOx ppm	CT02 NOx ppm @15% O2	CT02 lb/MMBtu	CT02 NOx lbs	CT02 CO ppm	CT02 CO ppm @15% O2	CT02 CO lbs	CT02 3-Hr Rolling CO lbs	CT02 SCR NOx ppm	CT02 SCR NOx ppm @15% O2	CT02 Process Status	CT02 Exhaust Temp °F		
12-Jun-05	0:00	Down	0.00	Down	Down	0.00	387.3	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Inval	Down	Down	Normal	172	
	1:00	Down	0.00	Down	Down	0.00	361.1	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Inval	Down	Down	Normal	105	
	2:00	Down	0.00	Down	Down	0.00	346.0	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	100	
	3:00	Down	0.00	Down	Down	0.00	332.3	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	103	
	4:00	Down	0.00	Down	Down	0.00	336.4	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	102	
	5:00	Down	0.00	Down	Down	0.00	352.3	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	98	
	6:00	Down	0.00	Down	Down	0.00	347.7	Down	Normal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	DCal	Normal	97
	7:00	Down	0.00	Down	Down	0.00	343.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	98	
	8:00	Down	0.00	Down	Down	0.00	340.2	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	107	
	9:00	Down	0.00	Down	Down	0.00	334.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	116	
	10:00	Down	0.00	Down	Down	0.00	329.4	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	118	
	11:00	Down	0.00	Down	Down	0.00	321.8	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	120	
	12:00	Down	0.00	Down	Down	0.00	313.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	123	
	13:00	Down	0.00	Down	Down	0.00	304.0	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	127	
	14:00	Down	0.00	Down	Down	0.00	289.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	129	
	15:00	Down	0.00	Down	Down	0.00	283.0	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	128	
	16:00	Down	0.00	Down	Down	0.00	272.1	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	127	
	17:00	Down	0.00	Down	Down	0.00	263.5	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	126	
	18:00	Down	0.00	Down	Down	0.00	258.0	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	124	
	19:00	Down	0.00	Down	Down	0.00	252.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	122	
	20:00	Down	0.00	Down	Down	0.00	247.8	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	119	
	21:00	Down	0.00	Down	Down	0.00	243.1	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	116	
	22:00	Down	0.00	Down	Down	0.00	236.6	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	112	
	23:00	Down	0.00	Down	Down	0.00	231.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	105	
13-Jun-05	0:00	Down	0.00	Down	Down	0.00	228.0	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	107	
	1:00	Down	0.00	Down	Down	0.00	224.2	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	101	
	2:00	Down	0.00	Down	Down	0.00	221.8	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	99	
	3:00	10.5	0.45	232	Down	0.00	254.4	7.5	Startup	18.2	9.5	0.0763	17.7	44.9	98.1	0.220	51.1	Inval	16.1	35.2	Startup	107		
	4:00	33.0	1.00	736	Down	0.00	486.2	35.0	Startup	17.1	20.9	32.5	0.1193	87.8	34.1	52.9	0.118	86.8	Inval	31.1	48.3	Startup	160	
	5:00	36.7	1.00	826	0.0	0.07	550.5	50.6	Startup	16.5	23.0	30.8	0.1134	93.7	28.6	38.4	0.086	71.0	69.6	33.8	45.3	Startup	274	
	6:00	45.9	1.00	1020	9.7	1.00	539.6	80.9	Startup	15.1	14.1	14.3	0.0527	53.7	4.1	4.2	0.009	92	55.7	29.8	30.3	Startup	284	
	7:00	62.8	1.00	1374	88.4	1.00	577.5	127.6	Normal	14.1	2.6	2.3	0.0083	11.4	0.0	0.0	0.000	0	26.7	21.0	18.2	Normal	240	
	8:00	62.7	1.00	1374	57.7	1.00	601.9	127.8	Normal	14.1	2.5	2.2	0.0080	11.0	0.0	0.0	0.000	0	3.1	22.1	19.2	Normal	233	
	9:00	78.1	1.00	1713	82.2	1.00	640.7	167.6	Normal	13.9	2.6	2.2	0.0081	13.9	0.0	0.0	0.000	0	0.0	25.0	21.1	Normal	233	
	10:00	79.5	1.00	1745	84.2	1.00	649.5	170.8	Normal	13.9	2.6	2.2	0.0081	14.1	0.0	0.0	0.000	0	0.0	24.4	20.6	Normal	232	
	11:00	81.0	1.00	1777	91.0	1.00	652.4	174.0	Normal	13.9	2.7	2.3	0.0084	14.9	0.0	0.0	0.000	0	0.0	25.7	21.7	Normal	236	
	12:00	78.8	1.00	1786	97.3	1.00	652.6	173.1	Normal	13.9	2.6	2.2	0.0081	14.5	0.0	0.0	0.000	0	0.0	26.9	22.7	Normal	237	
	13:00	78.8	1.00	1787	100.5	1.00	653.4	172.8	Normal	13.9	2.7	2.3	0.0084	15.0	0.0	0.0	0.000	0	0.0	27.7	23.3	Normal	238	
	14:00	78.8	1.00	1790	104.1	1.00	654.3	172.4	Normal	13.9	2.6	2.2	0.0081	14.5	0.0	0.0	0.000	0	0.0	28.4	23.9	Normal	239	
	15:00	78.4	1.00	1789	107.2	1.00	654.9	172.3	Normal	13.9	2.7	2.3	0.0084	15.0	0.0	0.0	0.000	0	0.0	29.3	24.7	Normal	238	
	16:00	78.2	1.00	1797	101.5	1.00	654.7	172.7	Normal	13.9	2.6	2.2	0.0081	14.6	0.0	0.0	0.000	0	0.0	28.5	24.0	Normal	238	
	17:00	78.2	1.00	1792	95.4	1.00	653.8	172.9	Normal	13.9	2.6	2.2	0.0081	14.5	0.0	0.0	0.000	0	0.0	27.4	23.1	Normal	237	
	18:00	78.2	1.00	1779	85.3	1.00	652.8	172.1	Normal	13.9	2.6	2.2	0.0081	14.4	0.0	0.0	0.000	0	0.0	25.6	21.6	Normal	236	
	19:00	76.2	1.00	1728	80.7	1.00	650.3	166.9	Normal	13.9	2.7	2.3	0.0084	14.5	0.0	0.0	0.000	0	0.0	25.2	21.2	Normal	236	
	20:00	52.7	1.00	1109	65.8	0.03	621.6	102.6	Shutdown	14.5	2.4	2.2	0.0081	9.7	3.2	3.0	0.007	8.4	3.8	24.9	23.0	Shutdown	235	
	21:00	7.0	0.30	158	Down	0.00	527.8	3.3	Shutdown	18.4	1.4	17.5	0.0642	10.2	23.0	54.3	0.121	19.2	9.2	20.8	49.1	Shutdown	219	
	22:00	Down	0.00	Down	Down	0.00	433.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Inval	Down	Down	Normal	222	
	23:00	Down	0.00	Down	Down	0.00	397.3	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Inval	Down	Down	Normal	135	
14-Jun-05	0:00	Down	0.00	Down	Down	0.00	373.9	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	117	
	1:00	Down	0.00	Down	Down	0.00	360.8	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	110	
	2:00	Down	0.00	Down	Down	0.00	349.0	Down	Normal	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Normal	104	
	3:00	10.7	0.47	244	Down	0.00	373.9	9.6	Startup	18.2	11.8	25.8	0.0948	23.1	24.4	53.3	0.119	29.0	Inval	16.4	35.8	Startup	107	
	4:00	35.3	1.00	802	0.0	0.17	528.7	46.6	Startup	16.6	23.6	32.4	0.1190	95.5	31.6	43.4	0.097	77.8	Inval	31.1	42.7	Startup	177	
	5:00	40.9	1.00	924	0.0	1.00	559.6	67.8	Startup	15.8	19.7	22.8	0.0838	77.5	17.6	20.4	0.046	42.5	49.8	31.3	36.2	Startup	285	
	6:00	45.3	1.00	1016	14.0	1.00	566.2	80.5	Startup	15.0	13.6	13.6	0.0500	50.8	4.3	4.3	0.010	10.2	43.5	28.4	28.4	Startup	278	
	7:00	55.7	1.00	1230	87.4	1.00	596.8	108.4	Normal	14.2	2.2	1.9	0.0071	8.7	0.1	0.1	0.000	0	0.0	17.6	24.9	21.9	Normal	261
	8:00	71.9	1.00	1580	60.4	1.00	631.7	153.3	Normal	13.9	2.6	2.2	0.0081	12.8	0.0	0.0	0.000	0	0.0	3.4	22.5	19.0	Normal	233
	9:00	81.5	1.00	1792	95.9																			

Table A-3 Redding Data

		Heat Content Btu/scf	O2%	NOx ppm @15% O2	NOx lb/mmBtu	NOx lbs	SCONoX inlet NOx ppm	Gas Flow kscf	Process Status	Turbine On-Time	Heat Input mmBtu/hr	
8-Jun-05	0:00:00	1021										
	1:00:00	1020										
	2:00:00	1021										
	3:00:00	1021										
	4:00:00	1022										
	5:00:00	1022										
	6:00:00	1022										
	7:00:00	1023										
	8:00:00	1024										
	9:00:00	1025										
	10:00:00	1025										
	11:00:00	1025										
	12:00:00	1026										
	13:00:00	1026										
	14:00:00	1025										
	15:00:00	1024										
	16:00:00	1024										
	17:00:00	1024										
	18:00:00	1024										
	19:00:00	1024										
	20:00:00	1025										
	21:00:00	1026										
	22:00:00	1027										
	23:00:00	1027										
9-Jun-05	0:00:00	1028	14.3	0.41	0.4	0.001	0.3	25.6	297.4	Normal	1.00	308.7
	1:00:00	1028	14.3	0.41	0.4	0.001	0.3	25.6	297.2	Normal	1.00	308.5
	2:00:00	1028	14.3	0.40	0.4	0.001	0.3	25.6	296.9	Normal	1.00	308.2
	3:00:00	1029	14.3	0.40	0.4	0.001	0.3	25.6	296.4	Normal	1.00	307.7
	4:00:00	1031	14.3	0.41	0.4	0.001	0.3	25.6	296.2	Normal	1.00	307.5
	5:00:00	1032	14.3	0.40	0.4	0.001	0.3	25.6	296.1	Normal	1.00	307.4
	6:00:00	1032	14.3	0.38	0.3	0.001	0.3	25.9	296.2	Normal	1.00	307.5
	7:00:00	1032	14.4	0.37	0.3	0.001	0.3	26.4	296.4	Normal	1.00	307.7
	8:00:00	1030	14.4	0.37	0.3	0.001	0.3	26.3	297.4	Normal	1.00	308.7
	9:00:00	1028	14.4	0.43	0.4	0.001	0.4	27.8	338.5	Normal	1.00	351.4
	10:00:00	1026	14.5	0.55	0.5	0.002	0.8	29.5	380.1	Normal	1.00	394.5
	11:00:00	1025	14.5	0.57	0.5	0.002	0.8	29.8	394.2	Normal	1.00	409.2
	12:00:00	1023	14.5	0.60	0.6	0.002	0.9	28.0	411.8	Normal	1.00	427.4
	13:00:00	1022	14.4	0.48	0.4	0.002	0.8	27.7	366.0	Normal	1.00	379.9
	14:00:00	1021	14.3	0.39	0.3	0.001	0.3	26.3	312.3	Normal	1.00	324.2
	15:00:00	1021	14.3	0.39	0.3	0.001	0.3	26.6	327.0	Normal	1.00	339.4
	16:00:00	1021	14.3	0.38	0.3	0.001	0.3	27.0	320.6	Normal	1.00	332.8
	17:00:00	1020	14.4	0.35	0.3	0.001	0.3	26.1	297.6	Normal	1.00	308.9
	18:00:00	1020	14.3	0.35	0.3	0.001	0.3	26.0	297.5	Normal	1.00	308.8
	19:00:00	1021	14.3	0.38	0.3	0.001	0.3	26.2	328.6	Normal	1.00	341.1
	20:00:00	1021	14.3	0.35	0.3	0.001	0.3	26.0	299.5	Normal	1.00	310.9
	21:00:00	1023	14.3	0.36	0.3	0.001	0.3	26.1	295.2	Normal	1.00	306.4
	22:00:00	1030	14.3	0.35	0.3	0.001	0.3	26.2	293.3	Normal	1.00	304.4
	23:00:00	1039	14.3	0.36	0.3	0.001	0.3	26.6	291.9	Normal	1.00	303.0
10-Jun-05	0:00:00	1047	14.3	0.36	0.3	0.001	0.3	26.9	291.1	Normal	1.00	302.2
	1:00:00	1052	14.3	0.38	0.3	0.001	0.3	27.2	290.9	Normal	1.00	302.0
	2:00:00	1055	14.3	0.37	0.3	0.001	0.3	27.3	290.9	Normal	1.00	302.0
	3:00:00	1056	14.3	0.37	0.3	0.001	0.3	27.3	291.0	Normal	1.00	302.1
	4:00:00	1056	14.3	0.37	0.3	0.001	0.3	27.3	291.1	Normal	1.00	302.2
	5:00:00	1056	14.3	0.35	0.3	0.001	0.3	27.1	291.0	Normal	1.00	302.1
	6:00:00	1055	14.4	0.36	0.3	0.001	0.3	26.6	290.7	Normal	1.00	301.7
	7:00:00	1055	14.4	0.36	0.3	0.001	0.3	25.4	290.2	Normal	1.00	301.2
	8:00:00	1055	14.4	0.37	0.3	0.001	0.3	25.7	289.5	Normal	1.00	300.5
	9:00:00	1057	14.4	0.35	0.3	0.001	0.3	26.1	289.5	Normal	1.00	300.5
	10:00:00	1058	14.4	0.35	0.3	0.001	0.3	25.7	289.4	Normal	1.00	300.4
	11:00:00	1058	14.4	0.34	0.3	0.001	0.3	25.5	289.4	Normal	1.00	300.4
	12:00:00	1058	14.4	0.35	0.3	0.001	0.3	25.3	289.4	Normal	1.00	300.4
	13:00:00	1057	14.4	0.39	0.4	0.001	0.3	25.7	323.7	Normal	1.00	336.0
	14:00:00	1056	14.5	0.44	0.4	0.001	0.4	27.3	352.2	Normal	1.00	365.6
	15:00:00	1056	14.4	0.45	0.4	0.002	0.7	27.8	353.2	Normal	1.00	365.6
	16:00:00	1056	14.4	0.45	0.4	0.002	0.7	28.0	352.9	Normal	1.00	366.3
	17:00:00	1056	14.4	0.46	0.4	0.002	0.7	27.8	346.1	Normal	1.00	359.3
	18:00:00	1057	14.3	0.38	0.3	0.001	0.3	26.3	306.6	Normal	1.00	318.3
	19:00:00	1057	14.3	0.36	0.3	0.001	0.3	26.2	290.4	Normal	1.00	301.4
	20:00:00	1057	14.3	0.36	0.3	0.001	0.3	26.1	290.8	Normal	1.00	301.9
	21:00:00	1057	14.3	0.36	0.3	0.001	0.3	26.0	291.0	Normal	1.00	302.1
	22:00:00	1057	14.3	0.36	0.3	0.001	0.3	26.2	291.2	Normal	1.00	302.3
	23:00:00	1057	14.3	0.35	0.3	0.001	0.3	26.1	291.2	Normal	1.00	302.3

Table A-3 Redding Data

		Heat Content Btu/scf	O2%	NOx ppm	NOx ppm @15% O2	NOx lb/mmBtu	NOx lbs	SCONoX inlet NOx ppm	Gas Flow kscf	Process Status	Turbine On-Time	Heat Input mmBtu/hr
11-Jun-05	0:00:00	1057	14.3	0.36	0.3	0.001	0.3	26.1	291.2	Normal	1.00	302.3
	1:00:00	1057	14.3	0.36	0.3	0.001	0.3	26.4	291.2	Normal	1.00	302.3
	2:00:00	1057	14.3	0.37	0.3	0.001	0.3	26.6	291.2	Normal	1.00	302.3
	3:00:00	1057	14.3	0.37	0.3	0.001	0.3	26.6	291.5	Normal	1.00	302.6
	4:00:00	1056	14.3	0.37	0.3	0.001	0.3	26.7	291.5	Normal	1.00	302.6
	5:00:00	1056	14.3	0.40	0.4	0.001	0.3	26.8	291.8	Normal	1.00	302.9
	6:00:00	1056	14.3	0.41	0.4	0.001	0.3	26.9	292.1	Normal	1.00	303.2
	7:00:00	1054	14.4	0.39	0.4	0.001	0.3	26.9	292.6	Normal	1.00	303.7
	8:00:00	1052	14.4	0.40	0.4	0.001	0.3	26.8	292.9	Normal	1.00	304.0
	9:00:00	1050	14.4	0.40	0.4	0.001	0.3	26.6	293.0	Normal	1.00	304.1
	10:00:00	1048	14.4	0.40	0.4	0.001	0.3	26.7	293.0	Normal	1.00	304.1
	11:00:00	1048	14.4	0.39	0.4	0.001	0.3	26.6	292.7	Normal	1.00	303.8
	12:00:00	1048	14.4	0.39	0.4	0.001	0.3	26.8	292.3	Normal	1.00	303.4
	13:00:00	1049	14.4	0.39	0.4	0.001	0.3	26.6	291.9	Normal	1.00	303.0
	14:00:00	1051	14.4	0.39	0.4	0.001	0.3	26.7	296.8	Normal	1.00	308.1
	15:00:00	1051	14.4	0.42	0.4	0.001	0.3	26.9	325.6	Normal	1.00	338.0
	16:00:00	1050	14.4	0.44	0.4	0.001	0.3	27.1	325.4	Normal	1.00	337.8
	17:00:00	1050	14.3	0.42	0.4	0.001	0.3	27.3	316.1	Normal	1.00	328.1
	18:00:00	1050	14.3	0.42	0.4	0.001	0.3	27.3	310.1	Normal	1.00	321.9
	19:00:00	1051	14.3	0.38	0.3	0.001	0.3	27.1	291.4	Normal	1.00	302.5
	20:00:00	1052	14.3	0.39	0.3	0.001	0.3	27.1	291.6	Normal	1.00	302.7
	21:00:00	1053	14.3	0.40	0.4	0.001	0.3	27.2	291.8	Normal	1.00	302.9
	22:00:00	1053	14.3	0.40	0.4	0.001	0.3	27.3	292.0	Normal	1.00	303.1
	23:00:00	1054	14.3	0.41	0.4	0.001	0.3	27.4	292.1	Normal	1.00	303.2
12-Jun-05	0:00:00	1054	14.3	0.40	0.4	0.001	0.3	27.6	292.2	Normal	1.00	303.3
	1:00:00	1054	14.3	0.40	0.4	0.001	0.3	27.7	292.2	Normal	1.00	303.3
	2:00:00	1054	14.3	0.41	0.4	0.001	0.3	27.7	292.4	Normal	1.00	303.5
	3:00:00	1055	14.3	0.41	0.4	0.001	0.3	27.8	292.5	Nonnal	1.00	303.6
	4:00:00	1055	14.3	0.41	0.4	0.001	0.3	27.9	292.7	Normal	1.00	303.8
	5:00:00	1055	14.3	0.42	0.4	0.001	0.3	28.0	292.8	Normal	1.00	303.9
	6:00:00	1055	14.4	0.43	0.4	0.001	0.3	27.9	293.0	Normal	1.00	304.1
	7:00:00	1055	14.4	0.42	0.4	0.001	0.3	27.7	292.9	Normal	1.00	304.0
	8:00:00	1055	14.4	0.43	0.4	0.001	0.3	27.4	292.8	Normal	1.00	303.9
	9:00:00	1054	14.4	0.42	0.4	0.001	0.3	27.6	292.8	Normal	1.00	303.9
	10:00:00	1054	14.4	0.41	0.4	0.001	0.3	27.0	292.9	Normal	1.00	304.0
	11:00:00	1054	14.4	0.42	0.4	0.001	0.3	27.1	294.0	Normal	1.00	305.2
	12:00:00	1050	14.4	0.41	0.4	0.001	0.3	26.8	295.1	Normal	1.00	306.3
	13:00:00	1045	14.4	0.41	0.4	0.001	0.3	26.6	295.9	Normal	1.00	307.1
	14:00:00	1038	14.4	0.41	0.4	0.001	0.3	26.5	296.0	Normal	1.00	307.2
	15:00:00	1034	14.4	0.40	0.4	0.001	0.3	26.6	295.7	Normal	1.00	306.9
	16:00:00	1033	14.4	0.40	0.4	0.001	0.3	26.7	295.4	Normal	1.00	306.6
	17:00:00	1033	14.4	0.44	0.4	0.001	0.7	26.8	328.7	Normal	1.00	341.2
	18:00:00	1033	14.4	0.45	0.4	0.002	0.3	26.9	329.3	Normal	1.00	341.8
	19:00:00	1032	14.3	0.44	0.4	0.001	0.3	26.5	329.6	Normal	1.00	342.1
	20:00:00	1031	14.3	0.40	0.4	0.001	0.3	26.2	302.6	Normal	1.00	314.1
	21:00:00	1029	14.3	0.39	0.3	0.001	0.3	26.3	297.2	Normal	1.00	308.5
	22:00:00	1029	14.3	0.40	0.4	0.001	0.3	26.2	297.5	Normal	1.00	308.8
	23:00:00	1029	14.3	0.41	0.4	0.001	0.3	26.4	297.4	Normal	1.00	308.7
13-Jun-05	0:00:00	1028	14.3	0.41	0.4	0.001	0.3	26.6	297.6	Normal	1.00	308.9
	1:00:00	1027	14.3	0.41	0.4	0.001	0.3	26.7	297.8	Normal	1.00	309.1
	2:00:00	1026	14.3	0.41	0.4	0.001	0.3	26.7	297.8	Normal	1.00	309.1
	3:00:00	1026	14.3	0.41	0.4	0.001	0.3	26.8	297.7	Normal	1.00	309.0
	4:00:00	1026	14.3	0.41	0.4	0.001	0.3	26.9	297.7	Normal	1.00	309.0
	5:00:00	1027	14.3	0.40	0.4	0.001	0.3	26.9	297.1	Normal	1.00	308.4
	6:00:00	1029	14.4	0.42	0.4	0.001	0.3	26.8	296.1	Normal	1.00	307.4
	7:00:00	1033	14.4	0.41	0.4	0.001	0.3	26.6	296.3	Normal	1.00	307.6
	8:00:00	1036	14.4	0.42	0.4	0.001	0.3	26.9	311.7	Normal	1.00	323.5
	9:00:00	1033	14.4	0.44	0.4	0.001	0.3	26.8	326.6	Normal	1.00	339.0
	10:00:00	1029	14.4	0.44	0.4	0.001	0.3	26.9	327.3	Normal	1.00	339.7
	11:00:00	1026	14.4	0.44	0.4	0.001	0.3	26.5	327.3	Normal	1.00	339.7
	12:00:00	1024	14.5	0.48	0.4	0.002	0.7	27.5	355.7	Normal	1.00	369.2
	13:00:00	1023	14.5	0.48	0.4	0.002	0.7	27.5	359.1	Normal	1.00	372.7
	14:00:00	1022	14.4	0.40	0.4	0.001	0.3	25.6	297.3	Normal	1.00	308.6
	15:00:00	1022	14.4	0.41	0.4	0.001	0.3	25.7	316.8	Normal	1.00	328.8
	16:00:00	1022	14.4	0.42	0.4	0.001	0.3	26.1	327.1	Normal	1.00	339.5
	17:00:00	1022	14.4	0.44	0.4	0.001	0.3	26.1	331.8	Normal	1.00	344.4
	18:00:00	1022	14.5	0.54	0.5	0.002	0.8	28.4	377.7	Normal	1.00	392.1
	19:00:00	1023	14.3	0.43	0.4	0.001	0.3	25.8	325.7	Normal	1.00	338.1
	20:00:00	1024	14.3	0.41	0.4	0.001	0.3	25.6	325.4	Normal	1.00	337.8
	21:00:00	1025	14.3	0.41	0.4	0.001	0.3	25.7	325.7	Normal	1.00	338.1
	22:00:00	1025	14.3	0.41	0.4	0.001	0.3	25.9	325.7	Normal	1.00	338.1
	23:00:00	1026	14.3	0.39	0.3	0.001	0.3	25.8	296.9	Normal	1.00	330.3

Table A-4 Los Medanos Data

		Heat Content Btu/scf	CT1 Heat Input MMBTU	CT1 NOx ppm	CT1 CO ppm	CT1 O2 %	CT1 NH3 lb/hr	CT1 MW	CT1 Temp	CT1 Btu/KWh	CT2 Heat Input MMBTU	CT2 NOx ppm	CT2 CO ppm	CT2 O2 %	CT2 NH3 lb/hr	CT2 MW	CT2 Temp	CT2 Btu/KWh
6-Jun-05	12:00 PM	1,026.97																
	1:00 PM	1,028.50																
	2:00 PM	1,028.44																
	3:00 PM	1,028.22																
	4:00 PM	1,028.26																
	5:00 PM	1,028.88																
	6:00 PM	1,029.68																
	7:00 PM	1,021.03																
	8:00 PM	1,021.05																
	9:00 PM	1,020.58																
	10:00 PM	1,026.36																
	11:00 PM	1,027.15																
7-Jun-05	12:00 AM	1,028.05																
	1:00 AM	1,029.03																
	2:00 AM	1,030.03																
	3:00 AM	1,030.86																
	4:00 AM	1,030.75																
	5:00 AM	1,028.40																
	6:00 AM	1,031.03																
	7:00 AM	1,025.60																
	8:00 AM	1,025.83																
	9:00 AM	1,024.53																
	10:00 AM	1,023.27																
	11:00 AM	1,023.36																
	12:00 PM	1,024.08																
	1:00 PM	1,026.47																
	2:00 PM	1,027.56																
	3:00 PM	1,026.79																
	4:00 PM	1,030.97																
	5:00 PM	1,031.03																
	6:00 PM	1,030.69																
	7:00 PM	1,026.25																
	8:00 PM	1,025.69																
	9:00 PM	1,026.57																
	10:00 PM	1,023.07																
	11:00 PM	1,022.95																
8-Jun-05	12:00 AM	1,024.12																
	1:00 AM	1,024.57																
	2:00 AM	1,027.37																
	3:00 AM	1,026.78																
	4:00 AM	1,029.28																
	5:00 AM	1,029.38																
	6:00 AM	1,035.17																
	7:00 AM	1,039.38																
	8:00 AM	1,030.88																
	9:00 AM	1,029.24																
	10:00 AM	1,019.38																
	11:00 AM	1,023.73																
	12:00 PM	1,029.63																
	1:00 PM	1,028.24																
	2:00 PM	1,028.42																
	3:00 PM	1,029.17																
	4:00 PM	1,028.19																
	5:00 PM	1,027.97																
	6:00 PM	1,028.13																
	7:00 PM	1,023.52																
	8:00 PM	1,023.34																
	9:00 PM	1,024.63																
	10:00 PM	1,022.75																
	11:00 PM	1,023.06																

Table A-4 Los Medanos Data

		Heat Content Btu/scf	Heat Input MMBTU	CT1 NOx ppm	CT1 CO ppm	CT1 O2 %	CT1 NH3 lb/hr	CT1 MW	CT1 Temp	CT1 Btu/KWh	CT2 Heat Input MMBTU	CT2 NOx ppm	CT2 CO ppm	CT2 O2 %	CT2 NH3 lb/hr	CT2 MW	CT2 Temp	CT2 Btu/KWh
9-Jun-05	12:00 AM	1,025.81	N/A	N/A	N/A	N/A	N/A				1837.4	1.8	0.2	13.1	50.4			
	1:00 AM	1,024.78	N/A	N/A	N/A	N/A	N/A				1697.1	1.9	0.1	13.5	31.7			
	2:00 AM	1,028.16	N/A	N/A	N/A	N/A	N/A				1706.5	1.9	0.1	13.5	33.6			
	3:00 AM	1,029.55	N/A	N/A	N/A	N/A	N/A				1768.0	1.9	0.2	13.3	42.9			
	4:00 AM	1,030.30	N/A	N/A	N/A	N/A	N/A				1742.8	1.9	0.1	13.5	36.6			
	5:00 AM	1,035.78	N/A	N/A	N/A	N/A	N/A				1701.8	1.9	0.1	13.5	34.7			
	6:00 AM	1,034.69	1377.9	6.1	0.2	13.8	44.3				1430.0	1.8	0.1	13.5	39.7			
	7:00 AM	1,041.00	1643.0	1.9	0.0	13.7	43.5				1655.3	1.9	0.1	13.5	35.5			
	8:00 AM	1,038.28	1771.3	N/A	N/A	55.4					1787.7	1.8	0.2	13.4	43.6			
	9:00 AM	1,033.19	1610.1	1.9	0.0	13.7	38.8				1618.6	1.9	0.1	13.5	31.8			
	10:00 AM	1,028.97	1481.6	1.9	0.0	13.7	36.5				1499.8	1.9	0.1	13.5	31.5			
	11:00 AM	1,039.09	1647.9	1.9	0.0	13.7	39.3				1653.2	1.9	0.1	13.5	34.8			
	12:00 PM	1,031.06	1476.3	1.9	0.0	13.8	38.8				1490.0	1.9	0.1	13.5	32.8			
	1:00 PM	1,034.26	1769.0	1.9	0.1	13.6	48.0	163.0	1119.8	10403.9	1775.7	1.9	0.2	13.5	39.8	163.6	1125.1	10402.1
	2:00 PM	1,034.07	1535.7	1.9	0.0	13.8	39.2	138.8	1136.9	10828.3	1549.3	1.9	0.1	13.5	33.8	139.5	1154.3	10858.7
	3:00 PM	1,030.19	1775.3	1.9	0.1	13.5	52.4	163.8	1122.5	10455.6	1809.3	1.9	0.3	13.2	44.9	164.5	1125.8	10498.3
	4:00 PM	1,031.96	1761.0	1.9	0.1	13.6	48.8	163.2	1118.3	10442.1	1778.0	1.9	0.2	13.4	42.0	164.0	1123.2	10435.5
	5:00 PM	1,033.94	1632.5	1.9	0.0	13.8	40.3	150.1	1123.7	10610.3	1641.2	1.9	0.1	13.5	33.5	150.5	1141.1	10631.3
	6:00 PM	1,035.59	1578.0	1.9	0.0	13.8	40.7	144.8	1131.0	10631.2	1588.7	1.9	0.1	13.6	33.0	145.4	1147.8	10646.9
	7:00 PM	1,040.80	1635.1	1.9	0.0	13.8	41.2	151.1	1122.5	10511.3	1642.1	1.9	0.1	13.6	34.1	151.6	1139.4	10507.8
	8:00 PM	1,040.94	1623.4	1.9	0.0	13.8	41.8	150.6	1122.3	10510.9	1635.1	1.9	0.1	13.6	33.5	151.0	1139.3	10548.8
	9:00 PM	1,037.38	1683.6	1.9	0.0	13.8	42.3	156.8	1113.5	10482.7	1693.7	1.9	0.1	13.5	35.7	157.2	1129.6	10513.9
	10:00 PM	1,032.45	1428.3	2.0	0.0	13.8	43.0	123.2	1149.6	11461.6	1438.6	1.9	0.1	13.5	36.9	123.7	1168.4	11494.5
	11:00 PM	1,029.19	1366.2	1.8	0.0	13.8	41.4	116.4	1159.0	11510.5	1382.5	1.9	0.1	13.5	41.5	118.4	1176.3	11456.6
10-Jun-05	12:00 AM	1,034.03	N/A	N/A	N/A	N/A	N/A	5.3	678.5	2767.0	1699.3	1.8	0.1	13.4	41.1	154.6	1138.8	10521.5
	1:00 AM	1,035.38	N/A	N/A	N/A	N/A	N/A	0.0	581.8	0.0	1703.7	1.8	0.1	13.3	42.3	152.7	1140.7	10545.1
	2:00 AM	1,035.89	N/A	N/A	N/A	N/A	N/A	0.0	507.4	0.0	1476.0	1.9	0.1	13.5	30.3	129.8	1161.3	10967.7
	3:00 AM	1,038.64	N/A	N/A	N/A	N/A	N/A	0.0	451.1	0.0	1466.0	1.9	0.1	13.5	31.1	129.5	1162.3	10962.9
	4:00 AM	1,037.12	N/A	N/A	N/A	N/A	N/A	0.0	412.1	0.0	1654.3	1.8	0.1	13.4	41.4	150.1	1143.7	10596.9
	5:00 AM	1,039.64	N/A	N/A	N/A	N/A	N/A	13.1	606.9	5845.1	1717.1	1.8	0.2	13.4	39.0	158.0	1131.8	10445.1
	6:00 AM	1,040.78	1451.2	3.5	0.0	13.7	47.4	129.0	1145.5	11069.4	1465.8	1.9	0.1	13.5	40.9	129.5	1161.0	11115.2
	7:00 AM	1,032.62	1743.1	1.9	0.0	13.6	53.8	161.9	1123.1	10387.3	1752.8	1.9	0.2	13.4	43.8	162.3	1132.3	10405.6
	8:00 AM	1,047.81	1753.4	N/A	N/A	N/A	45.8	162.2	1114.7	10445.0	1770.3	1.8	0.2	13.5	40.4	163.0	1125.3	10470.0
	9:00 AM	1,063.63	1593.5	1.9	0.0	13.7	40.3	144.1	1129.9	10827.7	1606.0	1.9	0.1	13.5	35.1	144.5	1145.8	10862.3
	10:00 AM	1,071.52	1675.3	1.9	0.0	13.7	43.7	151.8	1124.0	10720.8	1689.1	1.9	0.1	13.5	36.7	152.4	1139.2	10746.5
	11:00 AM	1,075.44	1500.1	1.9	0.0	13.7	39.4	131.1	1144.7	11215.3	1513.6	1.9	0.1	13.6	35.2	131.8	1163.9	11261.0
	12:00 PM	1,075.63	1601.5	1.9	0.0	13.8	39.2	143.8	1132.3	10852.4	1611.6	1.9	0.1	13.6	32.0	144.3	1150.4	10879.4
	1:00 PM	1,075.10	1771.7	1.9	0.0	13.2	58.0	153.3	1133.9	10759.0	1794.9	1.9	0.1	13.0	48.1	153.9	1142.9	10801.6
	2:00 PM	1,074.72	1743.9	1.9	0.0	13.5	55.5	158.4	1132.8	10649.3	1763.3	1.9	0.2	13.3	45.7	159.2	1138.0	10651.8
	3:00 PM	1,076.03	1699.1	1.9	0.0	13.7	44.8	154.0	1124.4	10719.3	1711.5	1.9	0.1	13.5	37.0	154.5	1137.5	10736.1
	4:00 PM	1,077.96	1711.6	1.9	0.0	13.6	46.5	155.0	1123.6	10708.5	1723.8	1.9	0.1	13.4	38.2	155.5	1134.5	10729.2
	5:00 PM	1,079.13	1826.3	1.9	0.0	13.3	61.6	163.0	1130.1	10634.1	1848.2	1.9	0.2	13.1	50.9	163.5	1132.2	10633.5
	6:00 PM	1,079.14	1569.8	1.9	0.0	13.7	41.0	139.4	1135.4	10980.0	1579.2	1.9	0.1	13.5	32.7	139.9	1153.3	10996.7
	7:00 PM	1,079.07	1660.0	1.8	0.0	13.7	43.7	151.7	1120.7	10728.4	1667.9	1.8	0.1	13.5	36.7	152.3	1136.2	10720.7
	8:00 PM	1,077.87	1757.5	1.8	0.0	13.6	51.0	160.1	1117.6	10626.7	1769.4	1.8	0.1	13.4	43.1	160.4	1127.5	10639.4
	9:00 PM	1,077.53	1637.7	1.9	0.0	13.7	43.3	147.6	1123.0	10840.0	1647.6	1.8	0.1	13.5	35.5	148.1	1139.6	10850.9
	10:00 PM	1,076.84	1472.7	1.8	0.0	13.7	41.5	126.9	1146.5	11347.1	1489.0	1.8	0.1	13.5	40.4	127.5	1164.4	11419.5
	11:00 PM	1,076.60	1437.2	1.8	0.0	13.7	41.6	123.2	1152.6	11411.7	1446.8	1.8	0.1	13.5	38.2	123.8	1170.9	11430.9
11-Jun-05	12:00 AM	1,039.69	N/A	N/A	N/A	N/A	N/A	7.9	692.8	2919.3	1588.4	1.7	0.1	13.5	36.3	143.3	1146.3	10848.1
	1:00 AM	1,057.24	N/A	N/A	N/A	N/A	N/A	0.0	581.8	0.0	1474.5	1.8	0.1	13.5	31.9	128.2	1163.6	11199.7
	2:00 AM	1,052.70	N/A	N/A	N/A	N/A	N/A	0.0	509.2	0.0	1457.8	1.8	0.1	13.5	32.3	126.5	1165.2	11230.2
	3:00 AM	1,058.72	N/A	N/A	N/A	N/A	N/A	0.0	454.3	0.0	1445.0	1.8	0.1	13.5	33.5	125.6	1165.9	11212.8
	4:00 AM	1,063.13	N/A	N/A	N/A	N/A	N/A	0.0	413.2	0.0	1452.9	1.8	0.1	13.5	33.0	125.8	1165.7	11262.4
	5:00 AM	1,066.53	N/A	N/A	N/A	N/A	N/A	7.9	624.2	7248.1	1608.3	1.9	0.1	13.5	35.1	144.9	1144.8	10878.6
	6:00 AM	1,063.10	1468.1	6.3	0.1	13.7	44.4	129.5	1144.5	11182.9	15032.3	1.9	0.1	13.5	34.2	130.9	1159.7	11217.2
	7:00 AM	1,077.63	1594.1	1.8	0.0	13.7	44.3	142.7	1132.9	10926.8	1607.4	1.9	0.1	13.5	37.8	143.3	1148.3	10960.6
	8:00 AM	1,077.21	1723.7	N/A	N/A	N/A	61.9	152.1	1130.7	10734.7	1737.4	2.0	0.1	13.1	46.5	152.7	1141.6	10739.8
	9:00 AM	1,076.84	1957.0	1.9	0.0	12.7	75.3	165.8	1128.3	10565.5	1985.3	1.9	0.1	12.5	65.9	166.6	1130.3	10574.5
	10:00 AM	1,077.23	1720.2	1.8	0.0	13.5	49.2	155.7	1125.7	10675.8	1740.0	1.8	0.2	13.4	42.0	156.1	1134.7	10699.3
	11:00 AM	1,077.63	1749.0	1.9	0.0	13.6	41.1	159.9	1113.8	10625.7	1759.0	1.9	0.1	13.5	37.1	160.4	1124.9	10619.4
	12:00 PM	1,077.50	1631.4	1.9	0.0	13.7	39.3	147.2	1126.5	10793.4	1641.1	1.9	0.1	13.6	33.6	147.5	1144.9	10831.6

Table A-4 Los Medanos Data

		Heat Content Btu/scf	Heat Input MMBTU	CT1 NOx ppm	CT1 CO ppm	CT1 O2 %	CT1 NH3 lb/hr	CT1 MW	CT1 Temp	CT1 Btu/KWh	Heat Input MMBTU	CT2 NOx ppm	CT2 CO ppm	CT2 O2 %	CT2 NH3 lb/hr	CT2 MW	CT2 Temp	CT2 Btu/KWh
9-Jun-05	12:00 AM	1,025.81	N/A	N/A	N/A	N/A	N/A				1837.4	1.8	0.2	13.1	50.4			
	1:00 AM	1,024.78	N/A	N/A	N/A	N/A	N/A				1697.1	1.9	0.1	13.5	31.7			
	2:00 AM	1,028.16	N/A	N/A	N/A	N/A	N/A				1706.5	1.9	0.1	13.5	33.6			
	3:00 AM	1,029.55	N/A	N/A	N/A	N/A	N/A				1768.0	1.9	0.2	13.3	42.9			
	4:00 AM	1,030.30	N/A	N/A	N/A	N/A	N/A				1742.8	1.9	0.1	13.5	36.6			
	5:00 AM	1,035.78	N/A	N/A	N/A	N/A	N/A				1701.8	1.9	0.1	13.5	34.7			
	6:00 AM	1,034.69	1377.9	6.1	0.2	13.8	44.3				1430.0	1.8	0.1	13.5	39.7			
	7:00 AM	1,041.00	1643.0	1.9	0.0	13.7	43.5				1655.3	1.9	0.1	13.5	35.5			
	8:00 AM	1,038.28	1771.3	N/A	N/A	55.4					1787.7	1.8	0.2	13.4	43.6			
	9:00 AM	1,033.19	1610.1	1.9	0.0	13.7	38.8				1618.6	1.9	0.1	13.5	31.8			
	10:00 AM	1,028.97	1481.6	1.9	0.0	13.7	36.5				1499.8	1.9	0.1	13.5	31.5			
	11:00 AM	1,039.09	1647.9	1.9	0.0	13.7	39.3				1653.2	1.9	0.1	13.5	34.8			
	12:00 PM	1,031.06	1476.3	1.9	0.0	13.8	38.8				1490.0	1.9	0.1	13.5	32.8			
	1:00 PM	1,034.26	1769.0	1.9	0.1	13.6	48.0	163.0	1119.8	10403.9	1775.7	1.9	0.2	13.5	39.8	163.6	1125.1	10402.1
	2:00 PM	1,034.07	1535.7	1.9	0.0	13.8	39.2	138.8	1136.9	10828.3	1549.3	1.9	0.1	13.5	33.8	139.5	1154.3	10858.7
	3:00 PM	1,030.19	1775.3	1.9	0.1	13.5	52.4	163.8	1122.5	10455.6	1809.3	1.9	0.3	13.2	44.9	164.5	1125.8	10498.3
	4:00 PM	1,031.96	1761.0	1.9	0.1	13.6	48.8	163.2	1118.3	10442.1	1778.0	1.9	0.2	13.4	42.0	164.0	1123.2	10435.5
	5:00 PM	1,033.94	1632.5	1.9	0.0	13.8	40.3	150.1	1123.7	10610.3	1641.2	1.9	0.1	13.5	33.5	150.5	1141.1	10631.3
	6:00 PM	1,035.59	1578.0	1.9	0.0	13.8	40.7	144.8	1131.0	10631.2	1588.7	1.9	0.1	13.6	33.0	145.4	1147.8	10646.9
	7:00 PM	1,040.80	1635.1	1.9	0.0	13.8	41.2	151.1	1122.5	10511.3	1642.1	1.9	0.1	13.6	34.1	151.6	1139.4	10507.8
	8:00 PM	1,040.94	1623.4	1.9	0.0	13.8	41.8	150.6	1122.3	10510.9	1635.1	1.9	0.1	13.6	33.5	151.0	1139.3	10548.8
	9:00 PM	1,037.38	1683.6	1.9	0.0	13.8	42.3	156.8	1113.5	10482.7	1693.7	1.9	0.1	13.5	35.7	157.2	1129.6	10513.9
	10:00 PM	1,032.45	1428.3	2.0	0.0	13.8	43.0	123.2	1149.6	11461.6	1438.6	1.9	0.1	13.5	36.9	123.7	1168.4	11494.5
	11:00 PM	1,029.19	1366.2	1.8	0.0	13.8	41.4	116.4	1159.0	11510.5	1382.5	1.9	0.1	13.5	41.5	118.4	1176.3	11456.6
10-Jun-05	12:00 AM	1,034.03	N/A	N/A	N/A	N/A	N/A	5.3	678.5	2767.0	1699.3	1.8	0.1	13.4	41.1	154.6	1138.8	10521.5
	1:00 AM	1,035.38	N/A	N/A	N/A	N/A	N/A	0.0	581.8	0.0	1703.7	1.8	0.1	13.3	42.3	152.7	1140.7	10545.1
	2:00 AM	1,035.89	N/A	N/A	N/A	N/A	N/A	0.0	507.4	0.0	1476.0	1.9	0.1	13.5	30.3	129.8	1161.3	10967.7
	3:00 AM	1,038.64	N/A	N/A	N/A	N/A	N/A	0.0	451.1	0.0	1466.0	1.9	0.1	13.5	31.1	129.5	1162.3	10962.9
	4:00 AM	1,037.12	N/A	N/A	N/A	N/A	N/A	0.0	412.1	0.0	1654.3	1.8	0.1	13.4	41.4	150.1	1143.7	10596.9
	5:00 AM	1,039.64	N/A	N/A	N/A	N/A	N/A	13.1	606.9	5845.1	1717.1	1.8	0.2	13.4	39.0	158.0	1131.8	10445.1
	6:00 AM	1,040.78	1451.2	3.5	0.0	13.7	47.4	129.0	1145.5	11069.4	1465.8	1.9	0.1	13.5	40.9	129.5	1161.0	11115.2
	7:00 AM	1,032.62	1743.1	1.9	0.0	13.6	53.8	161.9	1123.1	10387.3	1752.8	1.9	0.2	13.4	43.8	162.3	1132.3	10405.6
	8:00 AM	1,047.81	1753.4	N/A	N/A	N/A	45.8	162.2	1114.7	10445.0	1770.3	1.8	0.2	13.5	40.4	163.0	1125.3	10470.0
	9:00 AM	1,063.63	1593.5	1.9	0.0	13.7	40.3	144.1	1129.9	10827.7	1606.0	1.9	0.1	13.5	35.1	144.5	1145.8	10862.3
	10:00 AM	1,071.52	1675.3	1.9	0.0	13.7	43.7	151.8	1124.0	10720.8	1689.1	1.9	0.1	13.5	36.7	152.4	1139.2	10746.5
	11:00 AM	1,075.44	1500.1	1.9	0.0	13.7	39.4	131.1	1144.7	11215.3	1513.6	1.9	0.1	13.6	35.2	131.8	1163.9	11261.0
	12:00 PM	1,075.63	1601.5	1.9	0.0	13.8	39.2	143.8	1132.3	10852.4	1611.6	1.9	0.1	13.6	32.0	144.3	1150.4	10879.4
	1:00 PM	1,075.10	1771.7	1.9	0.0	13.2	58.0	153.3	1133.9	10759.0	1794.9	1.9	0.1	13.0	48.1	153.9	1142.9	10801.6
	2:00 PM	1,074.72	1743.9	1.9	0.0	13.5	55.5	158.4	1132.8	10649.3	1763.3	1.9	0.2	13.3	45.7	159.2	1138.0	10651.8
	3:00 PM	1,076.03	1699.1	1.9	0.0	13.7	44.8	154.0	1124.4	10719.3	1711.5	1.9	0.1	13.5	37.0	154.5	1137.5	10736.1
	4:00 PM	1,077.96	1711.6	1.9	0.0	13.6	46.5	155.0	1123.6	10708.5	1723.8	1.9	0.1	13.4	38.2	155.5	1134.5	10729.2
	5:00 PM	1,079.13	1826.3	1.9	0.0	13.3	61.6	163.0	1130.1	10634.1	1848.2	1.9	0.2	13.1	50.9	163.5	1132.2	10633.5
	6:00 PM	1,079.14	1569.8	1.9	0.0	13.7	41.0	139.4	1135.4	10980.0	1579.2	1.9	0.1	13.5	32.7	139.9	1153.3	10996.7
	7:00 PM	1,079.07	1660.0	1.8	0.0	13.7	43.7	151.7	1120.7	10728.4	1667.9	1.8	0.1	13.5	36.7	152.3	1136.2	10720.7
	8:00 PM	1,077.87	1757.5	1.8	0.0	13.6	51.0	160.1	1117.6	10626.7	1769.4	1.8	0.1	13.4	43.1	160.4	1127.5	10639.4
	9:00 PM	1,077.53	1637.7	1.9	0.0	13.7	43.3	147.6	1123.0	10840.0	1647.6	1.8	0.1	13.5	35.5	148.1	1139.6	10850.9
	10:00 PM	1,076.84	1472.7	1.8	0.0	13.7	41.5	126.9	1146.5	11347.1	1489.0	1.8	0.1	13.5	40.4	127.5	1164.4	11419.5
	11:00 PM	1,076.60	1437.2	1.8	0.0	13.7	41.6	123.2	1152.6	11411.7	1446.8	1.8	0.1	13.5	38.2	123.8	1170.9	11430.9
11-Jun-05	12:00 AM	1,039.69	N/A	N/A	N/A	N/A	N/A	7.9	692.8	2919.3	1588.4	1.7	0.1	13.5	36.3	143.3	1146.3	10848.1
	1:00 AM	1,057.24	N/A	N/A	N/A	N/A	N/A	0.0	581.8	0.0	1474.5	1.8	0.1	13.5	31.9	128.2	1163.6	11199.7
	2:00 AM	1,052.70	N/A	N/A	N/A	N/A	N/A	0.0	509.2	0.0	1457.8	1.8	0.1	13.5	32.3	126.5	1165.2	11230.2
	3:00 AM	1,058.72	N/A	N/A	N/A	N/A	N/A	0.0	454.3	0.0	1445.0	1.8	0.1	13.5	33.5	125.6	1165.9	11212.8
	4:00 AM	1,063.13	N/A	N/A	N/A	N/A	N/A	0.0	413.2	0.0	1452.9	1.8	0.1	13.5	33.0	125.8	1165.7	11262.4
	5:00 AM	1,066.53	N/A	N/A	N/A	N/A	N/A	7.9	624.2	7248.1	1608.3	1.9	0.1	13.5	35.1	144.9	1144.8	10878.6
	6:00 AM	1,063.10	1468.1	6.3	0.1	13.7	44.4	129.5	1144.5	11182.9	15032.3	1.9	0.1	13.5	34.2	130.9	1159.7	11217.2
	7:00 AM	1,077.63	1594.1	1.8	0.0	13.7	44.3	142.7	1132.9	10926.8	1607.4	1.9	0.1	13.5	37.8	143.3	1148.3	10960.6
	8:00 AM	1,077.21	1723.7	N/A	N/A	N/A	61.9	152.1	1130.7	10734.7	1737.4	2.0	0.1	13.1	46.5	152.7	1141.6	10739.8
	9:00 AM	1,076.84	1957.0	1.9	0.0	12.7	75.3	165.8	1128.3	10565.5	1985.3	1.9	0.1	12.5	65.9	166.6	1130.3	10574.5
	10:00 AM	1,077.23	1720.2	1.8	0.0	13.5	49.2	155.7	1125.7	10675.6	1740.0	1.8	0.2	13.4	42.0	156.1	1134.7	10699.3
	11:00 AM	1,077.63	1749.0	1.9	0.0	13.6	41.1	159.9	1113.8	10625.7	1759.0	1.9	0.1	13.5	37.1	160.4	1124.9	10619.4
	12:00 PM	1,077.50	1631.4	1.9	0.0	13.7	39.3	147.2	1126.5	10793.4	1641.1	1.9	0.1	13.6	33.6	147.5	1144.9	10831.6

Table A-5 Delta Turbine Data

	CT1 Heat Input MMBTU	CT1 NOx ppm	CT1 CO ppm	CT1 O2 %	CT1 NH3 lb/hr	CT2 Heat Input MMBTU	CT2 NOx ppm	CT2 CO ppm	CT2 O2 %	CT2 NH3 lb/hr	CT2 MW	CT2 Temp	CT2 Blu/KWh	CT3 Heat Input MMBTU	CT3 NOx ppm	CT3 CO ppm	CT3 O2 %	CT3 NH3 lb/hr	
10-Jun-2005	12:00 AM	N/A	N/A	N/A	N/A	1870.2	1.8	0.34	13.969	73.22	178.0	1013.9	11061.0	0.2	N/A	N/A	N/A	N/A	
	1:00 AM	N/A	N/A	N/A	N/A	1870.1	1.8	0.34	13.962	73.66	176.6	1017.6	11129.2	N/A	N/A	N/A	N/A	N/A	
	2:00 AM	N/A	N/A	N/A	N/A	1887.7	1.9	0.34	13.938	76.42	176.3	1033.5	11087.9	0.2	N/A	N/A	N/A	N/A	
	3:00 AM	N/A	N/A	N/A	N/A	1784.9	1.9	0.34	13.867	66.20	177.6	1042.0	11130.1	0.2	N/A	N/A	N/A	N/A	
	4:00 AM	N/A	N/A	N/A	N/A	1819.7	1.8	0.35	13.874	73.88	168.6	1037.0	11214.2	0.2	N/A	N/A	N/A	N/A	
	5:00 AM	1408.6	1.8	1.43	13.913	47.20	1577.2	1.9	0.57	13.948	60.96	172.2	1006.7	11175.0	0.2	N/A	N/A	N/A	N/A
	6:00 AM	1738.6	1.9	0.24	13.756	51.09	1709.7	1.9	0.37	13.870	72.07	146.2	990.0	11235.0	N/A	N/A	N/A	N/A	N/A
	7:00 AM	1968.6	1.9	0.39	13.332	59.45	1945.6	1.9	0.63	13.484	85.78	162.1	1036.0	11127.9	0.2	N/A	N/A	N/A	N/A
	8:00 AM	1708.3	1.8	0.24	13.768	47.90	1675.3	1.8	0.36	13.866	66.30	177.8	1053.5	10853.3	0.2	N/A	N/A	N/A	N/A
	9:00 AM	1764.3	1.9	0.18	13.812	49.74	1743.4	1.8	0.34	13.903	70.79	160.1	1058.7	11063.6	0.2	N/A	N/A	N/A	N/A
	10:00 AM	1623.6	N/A	N/A	47.92	1604.4	N/A	N/A	N/A	64.41	167.4	1045.3	10925.1	N/A	N/A	N/A	N/A	N/A	
	11:00 AM	1579.2	1.9	0.30	13.720	44.44	1575.4	1.8	0.76	13.819	58.56	152.0	1036.7	11081.4	N/A	N/A	N/A	N/A	N/A
	12:00 PM	1697.3	1.9	0.25	13.718	49.89	1679.1	1.8	0.50	13.828	70.59	148.6	1069.8	11119.6	N/A	N/A	N/A	N/A	N/A
	1:00 PM	1723.1	1.8	0.23	13.760	48.04	1709.0	1.9	0.42	13.851	69.82	160.3	1047.9	10980.0	N/A	N/A	N/A	N/A	N/A
	2:00 PM	1651.6	1.9	0.21	13.693	47.84	1641.8	1.8	0.42	13.802	67.32	163.7	1063.4	10914.1	747.8	32.6	841.13	15.932	0.23
	3:00 PM	1493.4	1.9	0.25	13.781	45.53	1474.5	1.8	0.48	13.910	58.30	158.1	1079.4	10916.7	1170.9	11.2	4.12	14.331	50.05
	4:00 PM	1477.1	1.9	0.25	13.736	44.07	1454.0	1.8	0.38	13.844	56.15	138.6	1094.7	11278.4	1466.6	1.9	0.20	13.938	60.86
	5:00 PM	1365.0	1.9	0.34	13.909	46.89	1335.5	1.9	0.69	14.051	57.07	135.7	1093.1	11242.7	1354.1	1.9	0.47	14.025	56.94
	6:00 PM	1316.2	1.9	0.43	13.965	48.55	1308.6	1.9	0.92	14.105	59.28	122.0	1052.7	11623.7	1320.1	1.9	0.73	14.069	58.97
	7:00 PM	1352.7	1.9	0.39	13.882	47.76	1373.3	1.8	0.63	13.997	55.90	117.3	1061.3	11715.4	1387.4	1.9	0.46	13.977	56.35
	8:00 PM	N/A	N/A	N/A	N/A	1786.2	1.9	0.33	13.786	82.29	124.4	1077.4	11538.6	1785.1	1.9	0.00	13.801	68.03	
	9:00 PM	N/A	N/A	N/A	N/A	1589.4	1.8	0.39	13.857	61.97	171.7	1071.6	10869.9	1583.1	1.8	0.12	13.861	58.62	
	10:00 PM	N/A	N/A	N/A	N/A	1474.9	1.9	0.36	13.858	58.95	149.9	1054.2	11175.7	1417.4	1.9	0.90	13.941	62.34	
	11:00 PM	N/A	N/A	N/A	N/A	1840.8	1.8	0.32	13.791	88.69	137.3	1065.6	11233.7	N/A	N/A	N/A	N/A	N/A	
11-Jun-2005	12:00 AM	N/A	N/A	N/A	N/A	1838.2	1.9	0.33	13.837	77.08	177.0	1082.9	10811.1	0.2	N/A	N/A	N/A	N/A	
	1:00 AM	N/A	N/A	N/A	N/A	1856.7	1.8	0.33	13.844	78.85	174.9	1068.4	11021.1	N/A	N/A	N/A	N/A	N/A	
	2:00 AM	N/A	N/A	N/A	N/A	1863.2	1.8	0.33	13.845	78.54	176.4	1034.2	10961.1	0.2	N/A	N/A	N/A	N/A	
	3:00 AM	N/A	N/A	N/A	N/A	1856.7	1.8	0.34	13.855	77.85	177.3	1023.7	11009.7	0.2	N/A	N/A	N/A	N/A	
	4:00 AM	N/A	N/A	N/A	N/A	1860.0	1.9	0.34	13.856	77.90	177.3	1068.6	10942.4	304.3	N/A	N/A	N/A	N/A	
	5:00 AM	N/A	N/A	N/A	N/A	1535.0	1.8	0.48	13.925	62.26	177.3	1068.7	10998.2	1301.6	2.8	1.17	14.018	57.42	
	6:00 AM	N/A	N/A	N/A	N/A	1529.2	1.9	0.46	13.881	58.04	144.4	1093.1	11338.7	1543.5	1.9	0.19	13.854	56.17	
	7:00 AM	N/A	N/A	N/A	N/A	1806.7	1.9	0.37	13.788	81.10	139.5	1093.3	11435.9	1828.6	1.9	0.01	13.758	63.50	
	8:00 AM	N/A	N/A	N/A	N/A	1858.5	1.8	0.44	13.709	87.72	172.6	1039.7	10909.7	1877.5	1.9	0.06	13.667	66.13	
	9:00 AM	1135.7	8.7	375.30	14.463	41.50	1523.6	1.8	0.37	13.861	57.26	176.6	1078.0	10869.6	1530.0	1.9	0.08	13.860	56.71
	10:00 AM	1581.7	1.8	0.26	13.680	45.81	1564.5	N/A	N/A	57.77	143.4	1103.8	11281.9	1572.6	1.9	0.02	13.796	59.55	
	11:00 AM	1538.2	1.9	0.25	13.724	42.55	1513.1	1.9	0.78	13.831	55.69	145.9	1097.2	11144.4	1520.5	N/A	N/A	N/A	58.28
	12:00 PM	1656.4	1.8	0.23	13.676	46.45	1633.3	1.9	0.50	13.789	63.39	141.6	1092.3	11304.1	1648.0	1.9	0.01	13.772	57.88
	1:00 PM	1675.4	1.9	0.21	13.652	45.70	1648.4	1.8	0.42	13.752	64.00	154.6	1057.4	11042.4	1656.8	1.9	0.00	13.741	59.42
	2:00 PM	1544.6	1.9	0.23	13.707	43.74	1519.3	1.8	0.40	13.802	57.56	157.7	1093.5	11017.6	1532.6	1.9	0.05	13.812	56.71
	3:00 PM	1593.0	1.8	0.22	13.659	43.35	1566.6	1.9	0.34	13.763	58.12	142.2	1041.8	11254.4	1579.0	1.9	0.01	13.762	59.80
	4:00 PM	1614.4	1.9	0.22	13.644	44.68	1596.0	1.8	0.33	13.734	60.75	146.9	1055.7	11184.1	1613.5	1.9	0.00	13.739	62.32
	5:00 PM	1766.5	1.9	0.20	13.635	52.12	1731.5	1.9	0.35	13.732	75.16	151.7	1019.6	11064.7	1755.8	1.8	0.00	13.707	62.89
	6:00 PM	1719.6	1.9	0.19	13.649	49.10	1688.9	1.9	0.38	13.735	68.49	166.5	1057.1	10758.6	1709.4	1.9	0.00	13.751	61.32
	7:00 PM	1670.0	1.9	0.23	13.656	47.82	1647.7	1.8	0.36	13.738	64.69	163.8	1027.2	10916.2	1656.9	1.9	0.00	13.707	61.96
	8:00 PM	1745.4	1.9	0.23	13.642	52.13	1714.9	1.8	0.34	13.773	73.19	156.6	1100.5	11016.3	1744.3	1.9	0.01	13.704	62.37
	9:00 PM	1472.7	2.0	0.33	13.811	46.45	1484.7	1.9	0.38	13.867	57.72	166.3	1084.8	10853.9	1492.6	1.9	0.12	13.854	55.70
	10:00 PM	N/A	N/A	N/A	N/A	1548.8	1.9	0.38	13.864	66.66	138.4	1110.8	11310.6	1552.7	1.9	0.17	13.888	60.59	
	11:00 PM	N/A	N/A	N/A	N/A	1782.6	1.9	0.34	13.841	78.29	148.5	1066.5	10977.7	N/A	N/A	N/A	N/A	N/A	

Table A-5 Delta Turbine Data

		CT1 Heat Input MMBTU	CT1 NOx ppm	CT1 CO ppm	CT1 O2 %	CT1 NH3 lb/hr	CT2 Heat Input MMBTU	CT2 NOx ppm	CT2 CO ppm	CT2 O2 %	CT2 NH3 lb/hr	CT2 MW	CT2 Temp	CT2 Blu/KWh	CT3 Heat Input MMBTU	CT3 NOx ppm	CT3 CO ppm	CT3 O2 %	CT3 NH3 lb/hr
12-Jun-2005	12:00 AM	N/A	N/A	N/A	N/A	N/A	1853.3	1.8	0.33	13.851	78.10	170.1	1035.9	10885.8	N/A	N/A	N/A	N/A	N/A
	1:00 AM	N/A	N/A	N/A	N/A	N/A	1770.3	1.9	0.35	13.768	70.53	176.8	1019.1	10920.5	0.2	N/A	N/A	N/A	N/A
	2:00 AM	N/A	N/A	N/A	N/A	N/A	1761.9	1.8	0.33	13.774	70.59	168.6	1048.8	11027.4	0.2	N/A	N/A	N/A	N/A
	3:00 AM	N/A	N/A	N/A	N/A	N/A	1775.9	1.8	0.35	13.825	70.73	168.5	1014.7	11021.0	0.2	N/A	N/A	N/A	N/A
	4:00 AM	N/A	N/A	N/A	N/A	N/A	1768.0	1.9	0.34	13.864	70.75	168.2	1042.3	11005.9	N/A	N/A	N/A	N/A	N/A
	5:00 AM	N/A	N/A	N/A	N/A	N/A	1773.7	1.8	0.34	13.950	69.30	167.7	1037.2	11019.4	0.2	N/A	N/A	N/A	N/A
	6:00 AM	N/A	N/A	N/A	N/A	N/A	1808.8	1.8	0.34	13.956	77.06	167.7	1039.5	11057.7	N/A	N/A	N/A	N/A	N/A
	7:00 AM	N/A	N/A	N/A	N/A	N/A	1856.8	1.9	0.34	13.928	79.73	171.5	1035.6	11038.2	N/A	N/A	N/A	N/A	N/A
	8:00 AM	N/A	N/A	N/A	N/A	N/A	1884.4	1.9	0.35	13.883	85.53	175.6	1048.2	11083.1	300.0	N/A	N/A	N/A	N/A
	9:00 AM	N/A	N/A	N/A	N/A	N/A	1663.6	1.8	0.45	13.926	69.20	178.5	1055.8	11034.2	1311.7	3.9	2.12	14.189	53.62
	10:00 AM	N/A	N/A	N/A	N/A	N/A	1773.7	N/A	N/A	80.53	155.6	1066.8	11348.2	1784.9	1.9	0.04	13.883	60.61	
	11:00 AM	N/A	N/A	N/A	N/A	N/A	1531.3	N/A	N/A	53.84	170.2	1051.4	10918.6	1547.2	1.9	0.08	13.877	57.94	
	12:00 PM	N/A	N/A	N/A	N/A	N/A	1577.7	N/A	N/A	57.67	141.9	1042.7	11421.7	1588.8	1.9	0.01	13.820	59.70	
	1:00 PM	N/A	N/A	N/A	N/A	N/A	1419.2	1.9	0.82	13.979	54.80	145.7	1029.6	11267.6	1436.7	1.9	0.72	13.971	49.35
	2:00 PM	N/A	N/A	N/A	N/A	N/A	1729.8	1.9	0.45	13.854	71.04	128.7	1017.2	11616.3	1754.5	1.8	0.08	13.957	54.56
	3:00 PM	N/A	N/A	N/A	N/A	N/A	1719.1	1.8	0.42	13.838	68.49	164.9	1011.2	10999.8	1720.8	1.9	0.07	13.934	54.09
	4:00 PM	N/A	N/A	N/A	N/A	N/A	1746.1	1.8	0.41	13.778	72.13	162.8	1045.6	10989.9	1765.0	1.8	0.04	13.830	55.47
	5:00 PM	N/A	N/A	N/A	N/A	N/A	1587.2	1.8	0.40	13.818	57.40	167.1	1022.2	10920.6	1588.2	1.9	0.13	13.843	52.90
	6:00 PM	N/A	N/A	N/A	N/A	N/A	1741.6	1.9	0.37	13.821	69.22	147.4	1071.1	11332.7	1751.7	1.8	0.01	13.874	54.21
	7:00 PM	N/A	N/A	N/A	N/A	N/A	1659.7	1.9	0.40	13.765	62.77	165.7	1066.4	10987.7	1677.3	1.9	0.00	13.747	58.69
	8:00 PM	N/A	N/A	N/A	N/A	N/A	1852.8	1.8	0.55	13.627	80.61	156.0	1080.6	11138.8	1856.4	1.9	0.07	13.657	60.90
	9:00 PM	N/A	N/A	N/A	N/A	N/A	1658.1	1.8	0.39	13.809	65.20	174.1	1058.6	10895.7	1668.7	1.9	0.04	13.832	58.11
	10:00 PM	N/A	N/A	N/A	N/A	N/A	1443.2	1.9	0.42	13.910	57.67	156.7	1090.2	1108.9	1426.2	1.9	0.21	13.975	54.62
	11:00 PM	N/A	N/A	N/A	N/A	N/A	1763.3	1.9	0.37	13.831	77.73	134.6	1089.9	11254.8	N/A	N/A	N/A	N/A	N/A
13-Jun-2005	12:00 AM	N/A	N/A	N/A	N/A	N/A	1845.8	1.8	0.36	13.873	78.96	169.8	1040.2	10921.3	N/A	N/A	N/A	N/A	N/A
	1:00 AM	N/A	N/A	N/A	N/A	N/A	1856.7	1.8	0.41	13.877	77.91	176.2	1053.5	10909.2	N/A	N/A	N/A	N/A	N/A
	2:00 AM	N/A	N/A	N/A	N/A	N/A	1854.7	1.8	0.36	13.882	77.16	176.5	1043.0	10962.1	0.2	N/A	N/A	N/A	N/A
	3:00 AM	N/A	N/A	N/A	N/A	N/A	1862.8	1.8	0.34	13.889	77.22	176.8	1002.4	10964.3	N/A	N/A	N/A	N/A	N/A
	4:00 AM	N/A	N/A	N/A	N/A	N/A	1845.1	1.8	0.35	13.896	79.67	176.6	1032.1	10928.3	N/A	N/A	N/A	N/A	N/A
	5:00 AM	N/A	N/A	N/A	N/A	N/A	1553.5	1.8	0.48	13.925	68.34	177.2	1044.8	10957.2	1200.3	3.8	310.23	14.493	56.28
	6:00 AM	N/A	N/A	N/A	N/A	N/A	1653.8	1.9	0.49	13.836	78.84	149.5	1035.5	10949.6	1678.1	1.8	0.07	13.850	65.04
	7:00 AM	N/A	N/A	N/A	N/A	N/A	1751.0	1.8	0.46	13.784	82.39	159.4	1050.6	10762.7	1766.4	1.9	0.01	13.811	65.86
	8:00 AM	N/A	N/A	N/A	N/A	N/A	1752.7	1.9	0.45	13.787	85.33	170.7	1006.7	10506.8	1779.2	1.9	0.00	13.765	68.15
	9:00 AM	N/A	N/A	N/A	N/A	N/A	1871.8	1.8	0.47	13.608	91.53	170.9	1011.5	10604.5	1897.7	1.9	0.06	13.539	67.92
	10:00 AM	N/A	N/A	N/A	N/A	N/A	1801.8	N/A	N/A	80.19	176.7	1061.5	10691.9	1811.6	1.9	0.07	13.889	57.02	
	11:00 AM	N/A	N/A	N/A	N/A	N/A	1768.3	1.8	0.84	13.722	78.30	172.5	1009.2	10758.4	1807.5	N/A	N/A	N/A	61.36
	12:00 PM	1525.0	11.8	1.52	13.913	38.48	1825.0	1.8	0.61	13.717	81.99	169.4	1040.8	10911.3	1841.4	1.8	0.03	13.693	61.21
	1:00 PM	1825.2	1.9	0.29	13.632	54.91	1786.5	1.9	0.48	13.767	78.10	173.6	1053.8	10833.6	1810.5	1.9	0.04	13.745	59.11
	2:00 PM	1825.8	1.9	0.22	13.702	55.51	1806.0	1.8	0.42	13.781	81.54	171.5	1045.6	10859.6	1812.7	1.9	0.01	13.779	60.19
	3:00 PM	1813.0	1.9	0.16	13.675	53.82	1811.9	1.9	0.40	13.754	80.30	173.7	1027.2	10872.7	1819.0	1.9	0.00	13.749	59.06
	4:00 PM	1747.6	1.8	0.18	13.686	56.30	1725.3	1.8	0.38	13.755	71.26	174.2	1080.5	10933.4	1739.9	1.9	0.12	13.766	55.17
	5:00 PM	1709.2	0.9	0.19	13.773	64.50	1675.8	1.9	0.38	13.810	61.89	166.5	1033.3	11016.9	1700.2	1.9	0.41	13.894	48.57
	6:00 PM	1567.5	1.9	0.24	13.696	41.05	1505.9	1.9	0.64	13.818	55.62	157.9	1024.0	11106.7	1562.5	1.9	0.13	13.785	53.14
	7:00 PM	1802.8	1.8	0.17	13.742	49.92	N/A	N/A	N/A	N/A	141.8	1050.3	11389.6	1798.9	1.8	0.10	13.857	53.20	
	8:00 PM	1692.8	1.9	0.24	13.698	45.61	N/A	N/A	N/A	N/A	9.5	541.3	4475.0	1672.4	1.9	0.15	13.772	55.03	
	9:00 PM	1848.5	1.8	0.21	13.682	54.56	N/A	N/A	N/A	N/A	0.0	234.0	0.0	N/A	N/A	N/A	N/A	N/A	
	10:00 PM	1877.4	1.9	0.22	13.653	55.70	N/A	N/A	N/A	N/A	0.0	356.3	0.0	N/A	N/A	N/A	N/A	N/A	
	11:00 PM	1849.7	1.9	0.17	13.720	50.80	N/A	N/A	N/A	N/A	0.0	380.8	0.0	N/A	N/A	N/A	N/A	N/A	

Table A-6 Delta PG&E Natural Gas Data

		Composition (%)										Btu/scf	Sp. Gr.	Wobbe
		Methane	Ethane	Propane	nButane	iButane	nPentane	iPentane	C6Plus	N2	CO2			
10-Jun-2005	12:00 AM	95.16	2.35	0.420	0.110	0.070	0.020	0.030	0.010	1.21	0.62	1026.3	0.585	1342
	1:00 AM	95.19	2.33	0.410	0.110	0.070	0.020	0.030	0.010	1.20	0.62	1025.9	0.585	1341
	2:00 AM	95.21	2.32	0.400	0.100	0.070	0.020	0.030	0.010	1.21	0.62	1025.6	0.585	1341
	3:00 AM	95.23	2.31	0.390	0.100	0.060	0.020	0.030	0.010	1.21	0.62	1025.3	0.585	1341
	4:00 AM	95.26	2.30	0.390	0.100	0.060	0.020	0.030	0.010	1.21	0.62	1024.9	0.585	1340
	5:00 AM	95.28	2.30	0.380	0.100	0.060	0.020	0.030	0.010	1.20	0.62	1024.8	0.584	1341
	6:00 AM	94.96	2.54	0.450	0.110	0.070	0.020	0.030	0.010	1.17	0.64	1028.3	0.587	1342
	7:00 AM	93.54	3.54	0.770	0.150	0.100	0.020	0.040	0.020	1.11	0.71	1043.0	0.596	1351
	8:00 AM	92.17	4.48	1.080	0.200	0.130	0.030	0.050	0.020	1.07	0.77	1057.3	0.606	1358
	9:00 AM	91.13	5.17	1.330	0.240	0.160	0.040	0.050	0.020	1.04	0.81	1068.4	0.613	1365
	10:00 AM	90.65	5.46	1.470	0.260	0.170	0.040	0.060	0.030	1.03	0.83	1073.7	0.617	1367
	11:00 AM	90.51	5.52	1.520	0.270	0.180	0.040	0.060	0.030	1.03	0.83	1075.3	0.618	1368
	12:00 PM	90.54	5.49	1.520	0.270	0.180	0.040	0.060	0.030	1.05	0.83	1075.0	0.618	1367
	1:00 PM	90.57	5.46	1.510	0.270	0.180	0.040	0.060	0.030	1.06	0.83	1074.5	0.618	1367
	2:00 PM	90.50	5.50	1.520	0.270	0.180	0.040	0.060	0.030	1.07	0.83	1074.8	0.618	1367
	3:00 PM	90.30	5.63	1.560	0.270	0.180	0.040	0.060	0.030	1.09	0.83	1076.4	0.619	1368
	4:00 PM	90.14	5.74	1.600	0.280	0.190	0.040	0.060	0.030	1.09	0.84	1077.9	0.621	1368
	5:00 PM	90.11	5.76	1.610	0.280	0.190	0.040	0.060	0.030	1.08	0.84	1078.3	0.621	1368
	6:00 PM	90.15	5.74	1.600	0.270	0.190	0.040	0.060	0.030	1.08	0.84	1078.0	0.621	1368
	7:00 PM	90.22	5.70	1.580	0.270	0.180	0.040	0.060	0.030	1.08	0.84	1077.4	0.620	1368
	8:00 PM	90.28	5.66	1.570	0.270	0.180	0.040	0.060	0.030	1.08	0.83	1076.8	0.620	1368
	9:00 PM	90.30	5.64	1.560	0.270	0.180	0.040	0.060	0.030	1.09	0.83	1076.3	0.619	1368
	10:00 PM	90.33	5.62	1.550	0.270	0.180	0.040	0.060	0.030	1.10	0.83	1076.0	0.619	1368
	11:00 PM	90.31	5.63	1.560	0.270	0.180	0.040	0.060	0.030	1.10	0.83	1076.1	0.619	1368
11-Jun-2005	12:00 AM	90.29	5.64	1.560	0.270	0.180	0.040	0.060	0.030	1.10	0.83	1076.3	0.619	1368
	1:00 AM	90.27	5.65	1.570	0.270	0.180	0.040	0.060	0.030	1.10	0.83	1076.5	0.620	1367
	2:00 AM	90.25	5.67	1.570	0.270	0.180	0.040	0.060	0.030	1.09	0.83	1076.8	0.620	1368
	3:00 AM	90.24	5.68	1.580	0.270	0.180	0.040	0.060	0.030	1.09	0.83	1077.0	0.620	1368
	4:00 AM	90.22	5.69	1.590	0.270	0.190	0.040	0.060	0.030	1.09	0.83	1077.2	0.620	1368
	5:00 AM	90.21	5.69	1.590	0.270	0.190	0.040	0.060	0.030	1.08	0.84	1077.5	0.620	1368
	6:00 AM	90.25	5.67	1.590	0.270	0.190	0.040	0.060	0.030	1.07	0.83	1077.2	0.620	1368
	7:00 AM	90.34	5.61	1.570	0.270	0.180	0.040	0.060	0.030	1.07	0.83	1076.5	0.619	1368
	8:00 AM	90.39	5.58	1.570	0.270	0.180	0.040	0.060	0.030	1.06	0.83	1076.3	0.619	1368
	9:00 AM	90.37	5.59	1.570	0.270	0.180	0.040	0.060	0.030	1.06	0.82	1076.5	0.619	1368
	10:00 AM	90.34	5.62	1.580	0.270	0.180	0.040	0.060	0.030	1.06	0.82	1076.7	0.619	1369
	11:00 AM	90.32	5.63	1.580	0.270	0.180	0.040	0.060	0.030	1.07	0.83	1076.7	0.619	1369
	12:00 PM	90.34	5.62	1.570	0.270	0.180	0.040	0.060	0.030	1.07	0.83	1076.2	0.619	1368
	1:00 PM	90.37	5.61	1.550	0.260	0.180	0.040	0.060	0.030	1.08	0.83	1075.7	0.619	1367
	2:00 PM	90.42	5.57	1.540	0.260	0.180	0.040	0.050	0.030	1.09	0.83	1075.0	0.618	1367
	3:00 PM	90.58	5.47	1.500	0.260	0.170	0.040	0.050	0.030	1.09	0.82	1073.5	0.617	1367
	4:00 PM	90.82	5.31	1.450	0.250	0.170	0.040	0.050	0.030	1.08	0.80	1071.3	0.616	1365
	5:00 PM	90.98	5.20	1.420	0.240	0.170	0.040	0.050	0.030	1.08	0.79	1069.9	0.615	1364
	6:00 PM	91.13	5.09	1.390	0.240	0.160	0.040	0.050	0.030	1.08	0.79	1068.6	0.614	1364
	7:00 PM	91.30	4.98	1.350	0.240	0.160	0.040	0.050	0.030	1.08	0.78	1067.2	0.613	1363
	8:00 PM	91.47	4.86	1.320	0.230	0.160	0.040	0.050	0.030	1.07	0.77	1065.9	0.612	1363
	9:00 PM	91.62	4.77	1.290	0.230	0.160	0.040	0.050	0.030	1.05	0.76	1064.7	0.611	1362
	10:00 PM	91.78	4.66	1.260	0.230	0.160	0.040	0.050	0.030	1.05	0.75	1063.5	0.609	1363
	11:00 PM	91.92	4.58	1.230	0.220	0.160	0.040	0.050	0.030	1.04	0.75	1062.4	0.609	1361

Table A-6 Delta PG&E Natural Gas Data

		Composition (%)										Btu/scf	Sp. Gr.	Wobbe
		Methane	Ethane	Propane	nButane	iButane	nPentane	iPentane	C6Plus	N2	CO2			
12-Jun-2005	12:00 AM	92.00	4.52	1.210	0.220	0.150	0.040	0.050	0.030	1.04	0.74	1061.8	0.608	1362
	1:00 AM	92.03	4.50	1.210	0.220	0.150	0.030	0.050	0.030	1.03	0.74	1061.5	0.608	1361
	2:00 AM	92.04	4.49	1.210	0.220	0.150	0.040	0.050	0.030	1.03	0.74	1061.5	0.608	1361
	3:00 AM	92.08	4.47	1.200	0.220	0.150	0.030	0.050	0.030	1.03	0.74	1061.1	0.608	1361
	4:00 AM													
	5:00 AM													
	6:00 AM													
	7:00 AM													
	8:00 AM	91.91	4.57	1.220	0.220	0.160	0.040	0.050	0.030	1.04	0.76	1062.3	0.609	1361
	9:00 AM	91.69	4.71	1.260	0.230	0.160	0.040	0.050	0.030	1.05	0.77	1064.2	0.610	1363
	10:00 AM	91.57	4.78	1.290	0.230	0.160	0.040	0.050	0.030	1.06	0.78	1065.1	0.611	1363
	11:00 AM	91.47	4.83	1.310	0.240	0.170	0.040	0.050	0.030	1.08	0.78	1065.7	0.612	1362
	12:00 PM	91.42	4.84	1.310	0.240	0.170	0.040	0.050	0.030	1.12	0.77	1065.7	0.612	1362
	1:00 PM	91.43	4.84	1.310	0.240	0.170	0.040	0.050	0.030	1.12	0.77	1065.6	0.612	1362
	2:00 PM	91.47	4.79	1.300	0.240	0.170	0.040	0.050	0.030	1.15	0.76	1064.9	0.612	1361
	3:00 PM	91.50	4.76	1.300	0.240	0.170	0.040	0.050	0.030	1.14	0.76	1064.8	0.612	1361
	4:00 PM	91.52	4.76	1.300	0.240	0.170	0.040	0.060	0.030	1.11	0.76	1065.3	0.612	1362
	5:00 PM	91.51	4.78	1.320	0.250	0.170	0.040	0.060	0.030	1.08	0.76	1066.1	0.612	1363
	6:00 PM	91.50	4.81	1.330	0.250	0.170	0.040	0.060	0.030	1.05	0.77	1066.9	0.612	1364
	7:00 PM	91.47	4.84	1.340	0.250	0.170	0.040	0.060	0.030	1.02	0.77	1067.7	0.612	1365
	8:00 PM	91.43	4.88	1.340	0.250	0.180	0.040	0.060	0.030	1.01	0.77	1068.1	0.613	1364
	9:00 PM	91.42	4.90	1.340	0.250	0.180	0.040	0.060	0.030	1.00	0.78	1068.5	0.613	1365
	10:00 PM	91.41	4.91	1.350	0.250	0.180	0.040	0.060	0.030	0.98	0.78	1068.9	0.613	1365
	11:00 PM	91.40	4.93	1.350	0.250	0.180	0.040	0.060	0.030	0.96	0.79	1069.3	0.613	1366
13-Jun-2005	12:00 AM	91.40	4.94	1.360	0.250	0.180	0.040	0.060	0.030	0.95	0.79	1069.5	0.613	1366
	1:00 AM	91.39	4.95	1.360	0.250	0.180	0.040	0.060	0.030	0.94	0.79	1069.6	0.613	1366
	2:00 AM	91.38	4.97	1.360	0.250	0.180	0.040	0.060	0.030	0.93	0.80	1069.8	0.613	1366
	3:00 AM	91.37	4.98	1.360	0.250	0.180	0.040	0.060	0.030	0.93	0.80	1069.9	0.613	1367
	4:00 AM	91.35	4.99	1.370	0.250	0.180	0.040	0.060	0.030	0.93	0.80	1070.1	0.613	1367
	5:00 AM	91.31	5.03	1.370	0.250	0.180	0.040	0.060	0.030	0.92	0.82	1070.2	0.613	1367
	6:00 AM	91.31	5.02	1.360	0.250	0.180	0.040	0.060	0.030	0.92	0.82	1070.0	0.613	1367
	7:00 AM	91.34	5.00	1.350	0.250	0.180	0.040	0.060	0.030	0.93	0.83	1069.5	0.613	1366
	8:00 AM	91.36	4.98	1.340	0.250	0.180	0.040	0.060	0.030	0.93	0.83	1069.2	0.613	1366
	9:00 AM	91.45	4.93	1.310	0.250	0.170	0.040	0.060	0.030	0.95	0.82	1068.0	0.612	1365
	10:00 AM	91.74	4.77	1.210	0.230	0.160	0.040	0.060	0.030	0.96	0.80	1064.4	0.610	1363
	11:00 AM	92.47	4.36	1.000	0.190	0.130	0.030	0.050	0.030	0.98	0.75	1056.4	0.604	1359
	12:00 PM	93.31	3.84	0.790	0.160	0.110	0.030	0.040	0.020	1.00	0.70	1047.6	0.598	1355
	1:00 PM	94.17	2.99	0.820	0.170	0.120	0.030	0.040	0.020	1.04	0.60	1042.2	0.594	1352
	2:00 PM	94.64	2.59	0.770	0.170	0.110	0.030	0.040	0.020	1.08	0.55	1038.9	0.591	1351
	3:00 PM	94.85	2.61	0.590	0.140	0.090	0.020	0.040	0.020	1.10	0.54	1034.6	0.588	1349
	4:00 PM	94.94	2.61	0.530	0.130	0.080	0.020	0.030	0.020	1.11	0.53	1033.0	0.587	1348
	5:00 PM	95.12	2.48	0.490	0.120	0.080	0.020	0.030	0.010	1.13	0.51	1031.0	0.586	1347
	6:00 PM	95.12	2.43	0.520	0.130	0.080	0.020	0.030	0.020	1.14	0.50	1031.5	0.586	1347
	7:00 PM	94.72	2.70	0.620	0.150	0.090	0.020	0.040	0.020	1.11	0.54	1035.7	0.589	1350
	8:00 PM	94.23	3.05	0.710	0.160	0.100	0.030	0.040	0.020	1.08	0.58	1040.5	0.592	1352
	9:00 PM	94.21	3.08	0.710	0.160	0.100	0.030	0.040	0.020	1.07	0.58	1040.7	0.592	1353
	10:00 PM	94.51	2.89	0.640	0.150	0.100	0.030	0.040	0.020	1.08	0.56	1037.9	0.590	1351
	11:00 PM	94.71	2.76	0.600	0.140	0.090	0.020	0.040	0.020	1.08	0.54	1036.0	0.589	1350

Table A-7 Midway Sunset Data

Date/Time	Unit A CO ppm	Blu/scf	Wobbe
5/24/01 16:30	2.66	1111	1375
5/24/01 16:35	2.59	1110	1375
5/24/01 16:40	2.82	1111	1375
5/24/01 16:45	3.04	1110	1375
5/24/01 16:50	3.02	1110	1375
5/24/01 16:55	2.65	1105	1373
5/24/01 17:00	2.39	1105	1373
5/24/01 17:05	2.38	1106	1373
5/24/01 17:10	2.61	1106	1373
5/24/01 17:15	2.81	1107	1374
5/24/01 17:20	2.81	1107	1374
5/24/01 17:25	3.00	1106	1373
5/24/01 17:30	3.25	1105	1373
5/24/01 17:35	3.25	1105	1373
5/24/01 17:40	16.27	1096	1370
5/24/01 17:45	27.55	1075	1364
5/24/01 17:50	27.53	1075	1364
5/24/01 17:55	41.31	1030	1351
5/24/01 18:00	46.72	1023	1349
5/24/01 18:05	46.74	1021	1348
5/24/01 18:10	49.41	1019	1348
5/24/01 18:15	51.49	1019	1348
5/24/01 18:20	51.49	1019	1348
5/24/01 18:25	50.60	1019	1348
5/24/01 18:30	49.59	1019	1348
5/24/01 18:35	49.59	1018	1347
5/24/01 18:40	52.21	1018	1347
5/24/01 18:45	54.62	1018	1347
5/24/01 18:50	54.62	1018	1347
5/24/01 18:55	56.23	1018	1347
5/24/01 19:00	56.93	1018	1347
5/24/01 19:05	56.92	1018	1347
5/24/01 19:10	60.76	1017	1347
5/24/01 19:15	63.01	1017	1347
5/24/01 19:20	63.01	1017	1347
5/24/01 19:25	65.06	1016	1347
5/24/01 19:30	65.57	1016	1347
5/24/01 19:35	65.56	1016	1347
5/24/01 19:40	63.78	1016	1347
5/24/01 19:45	62.01	1014	1346
5/24/01 19:50	62.01	1027	1350
5/24/01 19:55	37.94	1029	1350
5/24/01 20:00	29.42	1024	1349
5/24/01 20:05	29.42	1028	1350
5/24/01 20:10	27.49	1029	1350
5/24/01 20:15	25.76	1029	1351
5/24/01 20:20	25.76	1032	1351
5/24/01 20:25	8.21	1033	1352
5/24/01 20:30	3.34	1069	1362
5/24/01 20:35	3.34	1090	1368
5/24/01 20:40	3.12	1095	1370
5/24/01 20:45	3.02	1113	1375
5/24/01 20:50	3.04	1114	1376
5/24/01 20:55	3.57	1114	1376
5/24/01 21:00	3.71	1113	1376
5/24/01 21:05	3.71	1110	1375
5/24/01 21:10	3.17	1107	1374
5/24/01 21:15	2.86	1106	1373
5/24/01 21:20	2.86	1111	1375
5/24/01 21:25	3.25	1111	1375
5/24/01 21:30	3.25	1113	1375

Date/Time	Unit A CO ppm	Unit X CO ppm	Blu/scf	Wobbe
5/9/05 9:00	1.39	4.11	1095	1370
5/9/05 9:01	1.36	3.99	1096	1370
5/9/05 9:02	1.53	4.06	1096	1370
5/9/05 9:03	1.49	3.84	1095	1370
5/9/05 9:04	1.50	3.97	1095	1370
5/9/05 9:05	1.48	4.02	1095	1370
5/9/05 9:06	1.42	4.14	1096	1370
5/9/05 9:07	1.41	4.47	1096	1370
5/9/05 9:08	1.51	4.29	1095	1370
5/9/05 9:09	1.47	4.40	1095	1369
5/9/05 9:10	1.47	4.45	1095	1369
5/9/05 9:11	1.58	4.71	1096	1370
5/9/05 9:12	1.50	4.36	1096	1370
5/9/05 9:13	1.40	4.32	1096	1370
5/9/05 9:14	1.45	4.41	1095	1369
5/9/05 9:15	1.46	4.33	1095	1369
5/9/05 9:16	1.55	4.25	1094	1369
5/9/05 9:17	1.53	4.45	1095	1369
5/9/05 9:18	1.39	4.46	1095	1369
5/9/05 9:19	1.60	4.48	1095	1369
5/9/05 9:20	1.41	4.22	1094	1369
5/9/05 9:21	1.46	4.35	1094	1369
5/9/05 9:22	1.41	4.14	1095	1369
5/9/05 9:23	1.48	4.23	1095	1369
5/9/05 9:24	1.55	4.30	1095	1369
5/9/05 9:25	1.50	4.35	1095	1370
5/9/05 9:26	1.54	4.19	1094	1369
5/9/05 9:27	1.33	4.27	1094	1369
5/9/05 9:28	1.44	4.13	1091	1366
5/9/05 9:29	1.49	4.35	1091	1366
5/9/05 9:30	1.42	4.42	1091	1366
5/9/05 9:31	1.43	4.46	1090	1366
5/9/05 9:32	1.49	4.74	1090	1366
5/9/05 9:33	1.45	4.91	1090	1366
5/9/05 9:34	1.45	4.77	1091	1366
5/9/05 9:35	1.38	4.91	1091	1366
5/9/05 9:36	1.51	4.59	1091	1366
5/9/05 9:37	1.41	4.61	1090	1366
5/9/05 9:38	1.37	4.58	1090	1366
5/9/05 9:39	1.42	4.57	1090	1366
5/9/05 9:40	1.53	4.63	1049	1350
5/9/05 9:41	1.55	4.71	1049	1350
5/9/05 9:42	1.51	4.59	1048	1350
5/9/05 9:43	1.35	4.56	1048	1350
5/9/05 9:44	1.38	4.43	1048	1350
5/9/05 9:45	1.58	4.60	1048	1350
5/9/05 9:46	1.46	4.63	1049	1350
5/9/05 9:47	1.42	5.52	1049	1350
5/9/05 9:48	1.39	7.08	1048	1350
5/9/05 9:49	1.51	7.99	1048	1350
5/9/05 9:50	1.61	8.52	1048	1350
5/9/05 9:51	1.31	9.02	1049	1350
5/9/05 9:52	1.46	9.16	1049	1350
5/9/05 9:53	1.53	9.48	1049	1350
5/9/05 9:54	1.40	8.99	1049	1351
5/9/05 9:55	1.51	9.08	1049	1351
5/9/05 9:56	1.55	8.92	1049	1350
5/9/05 9:57	1.41	8.97	1049	1350
5/9/05 9:58	1.38	8.69	1049	1351
5/9/05 9:59	1.64	8.97	1049	1351
5/9/05 10:00	1.45	9.04	1049	1351

Date/Time	Unit A CO ppm	Unit X CO ppm	Blu/scf	Wobbe
5/9/05 13:00	1.35	7.97	1053	1352
5/9/05 13:01	1.28	7.96	1052	1352
5/9/05 13:02	0.03	7.90	1052	1352
5/9/05 13:03	0.04	8.18	1052	1352
5/9/05 13:04	-0.03	8.35	1051	1351
5/9/05 13:05	1.18	8.07	1051	1352
5/9/05 13:06	1.11	8.02	1051	1352
5/9/05 13:07	-0.01	7.85	1051	1352
5/9/05 13:08	-0.22	8.06	1051	1352
5/9/05 13:09	-0.27	7.74	1051	1352
5/9/05 13:10	10.15	7.96	1051	1352
5/9/05 13:11	40.41	8.09	1051	1351
5/9/05 13:12	40.54	7.86	1051	1351
5/9/05 13:13	40.44	8.13	1051	1352
5/9/05 13:14	40.29	7.75	1051	1352
5/9/05 13:15	2.48	7.96	1051	1352
5/9/05 13:16	-0.72	7.95	1051	1352
5/9/05 13:17	-0.93	8.10	1051	1352
5/9/05 13:18	0.49	8.19	1051	1352
5/9/05 13:19	0.57	8.22	1051	1352
5/9/05 13:20	0.75	8.02	1051	1352
5/9/05 13:21	0.86	8.35	1051	1352
5/9/05 13:22	0.68	8.08	1051	1351
5/9/05 13:23	0.70	8.13	1051	1351
5/9/05 13:24	0.81	7.98	1051	1351
5/9/05 13:25	0.79	8.18	1051	1351
5/9/05 13:26	0.80	7.99	1051	1352
5/9/05 13:27	0.63	7.88	1051	1351
5/9/05 13:28	0.67	8.19	1046	1350
5/9/05 13:29	0.87	8.51	1046	1350
5/9/05 13:30	0.80	8.43	1046	1350
5/9/05 13:31	1.08	8.54	1046	1350
5/9/05 13:32	0.82	8.34	1046	1350
5/9/05 13:33	0.81	8.19	1046	1350
5/9/05 13:34	0.83	8.34	1046	1350
5/9/05 13:35	0.95	8.84	1046	1350
5/9/05 13:36	0.93	8.57	1046	1350
5/9/05 13:37	0.82	8.89	1046	1350
5/9/05 13:38	0.89	9.16	1046	1350
5/9/05 13:39	0.87	9.17	1046	1350
5/9/05 13:40	0.87	9.57	1045	1350
5/9/05 13:41	0.92	8.85	1045	1350
5/9/05 13:42	0.97	8.88	1044	1350
5/9/05 13:43	0.79	8.80	1044	1350
5/9/05 13:44	1.07	9.76	1044	1350
5/9/05 13:45	0.97	9.22	1044	1350
5/9/05 13:46	0.95	9.82	1044	1350
5/9/05 13:47	0.91	9.68	1044	1350
5/9/05 13:48	1.04	9.27	1044	1350
5/9/05 13:49	0.93	9.25	1044	1350
5/9/05 13:50	1.11	9.60	1044	1350
5/9/05 13:51	1.02	9.51	1044	1350
5/9/05 13:52	1.14	9.60	1046	1351
5/9/05 13:53	0.97	9.71	1046	1351
5/9/05 13:54	1.03	6.46	1046	1351
5/9/05 13:55	1.01	6.44	1046	1351
5/9/05 13:56	0.99	6.46	1046	1351
5/9/05 13:57	1.10	9.88	1046	1351
5/9/05 13:58	1.11	9.38	1046	1351
5/9/05 13:59	1.12	9.10	1046	1351
5/9/05 14:00	1.05	9.28	1046	1351

Date/Time	Unit A CO ppm	Unit X CO ppm	Blu/scf	Wobbe
5/9/05 17:00	1.46	3.83	1084	1365
5/9/05 17:01	1.50	4.05	1084	1365
5/9/05 17:02	1.40	3.91	1085	1365
5/9/05 17				

Date/Time	Unit A CO ppm	Unit X CO ppm	Btu/scf	Wobbe
5/9/05 10:01	1.39	8.78	1049	1351
5/9/05 10:02	1.47	9.21	1049	1351
5/9/05 10:03	1.36	8.90	1049	1351
5/9/05 10:04	1.31	9.33	1050	1351
5/9/05 10:05	1.50	9.05	1050	1351
5/9/05 10:06	1.41	9.22	1050	1351
5/9/05 10:07	1.47	8.82	1050	1351
5/9/05 10:08	1.13	9.07	1050	1351
5/9/05 10:09	1.53	8.65	1050	1351
5/9/05 10:10	1.63	8.72	1050	1351
5/9/05 10:11	1.43	8.49	1050	1351
5/9/05 10:12	1.60	8.91	1050	1351
5/9/05 10:13	1.52	8.85	1050	1351
5/9/05 10:14	1.59	8.71	1050	1351
5/9/05 10:15	1.41	8.73	1050	1351
5/9/05 10:16	1.42	9.19	1052	1352
5/9/05 10:17	1.66	8.79	1052	1352
5/9/05 10:18	1.49	8.67	1051	1352
5/9/05 10:19	1.26	8.50	1051	1352
5/9/05 10:20	1.56	8.58	1051	1352
5/9/05 10:21	1.59	8.93	1052	1352
5/9/05 10:22	1.63	9.22	1052	1352
5/9/05 10:23	1.54	8.48	1052	1352
5/9/05 10:24	1.36	8.25	1052	1352
5/9/05 10:25	1.46	8.69	1051	1352
5/9/05 10:26	1.39	8.95	1052	1352
5/9/05 10:27	1.43	8.82	1052	1352
5/9/05 10:28	1.44	8.93	1053	1353
5/9/05 10:29	1.67	8.68	1053	1353
5/9/05 10:30	1.48	8.66	1053	1353
5/9/05 10:31	1.57	8.70	1052	1353
5/9/05 10:32	1.45	8.40	1052	1353
5/9/05 10:33	1.29	8.44	1053	1353
5/9/05 10:34	1.38	8.52	1053	1353
5/9/05 10:35	1.38	8.38	1053	1353
5/9/05 10:36	1.61	8.44	1053	1353
5/9/05 10:37	1.43	8.26	1053	1353
5/9/05 10:38	1.46	8.33	1053	1353
5/9/05 10:39	1.59	8.41	1053	1353
5/9/05 10:40	1.56	8.44	1047	1351
5/9/05 10:41	1.50	8.66	1047	1351
5/9/05 10:42	1.59	8.68	1047	1351
5/9/05 10:43	1.44	8.75	1047	1351
5/9/05 10:44	1.40	8.71	1047	1351
5/9/05 10:45	1.41	8.56	1047	1351
5/9/05 10:46	1.50	9.04	1047	1351
5/9/05 10:47	1.36	9.43	1047	1351
5/9/05 10:48	1.30	9.17	1047	1351
5/9/05 10:49	1.34	9.16	1047	1351
5/9/05 10:50	1.24	9.33	1047	1351
5/9/05 10:51	1.34	9.16	1047	1351
5/9/05 10:52	1.36	9.63	1035	1347
5/9/05 10:53	1.39	9.58	1035	1347
5/9/05 10:54	1.46	10.03	1035	1347
5/9/05 10:55	1.45	9.40	1035	1348
5/9/05 10:56	1.72	10.61	1035	1348
5/9/05 10:57	1.36	10.55	1035	1347
5/9/05 10:58	1.43	11.06	1035	1347
5/9/05 10:59	1.41	11.40	1035	1347
5/9/05 11:00	1.50	11.79	1035	1347
5/9/05 11:01	1.52	12.59	1035	1348
5/9/05 11:02	1.40	13.09	1035	1347
5/9/05 11:03	1.40	13.01	1035	1347

Date/Time	Unit A CO ppm	Unit X CO ppm	Btu/scf	Wobbe
5/9/05 14:01	1.06	27.56	1046	1351
5/9/05 14:02	1.13	10.24	1046	1351
5/9/05 14:03	1.17	13.42	1046	1351
5/9/05 14:04	1.21	12.72	1047	1351
5/9/05 14:05	1.22	10.94	1047	1351
5/9/05 14:06	1.26	12.29	1047	1351
5/9/05 14:07	0.91	7.82	1047	1351
5/9/05 14:08	1.33	8.94	1047	1351
5/9/05 14:09	1.34	5.97	1047	1351
5/9/05 14:10	1.26	6.19	1047	1351
5/9/05 14:11	1.18	6.34	1047	1351
5/9/05 14:12	1.21	6.29	1047	1351
5/9/05 14:13	1.21	6.10	1047	1351
5/9/05 14:14	1.18	6.23	1047	1351
5/9/05 14:15	1.23	6.45	1047	1351
5/9/05 14:16	1.25	6.32	1050	1353
5/9/05 14:17	1.38	6.57	1050	1352
5/9/05 14:18	1.14	6.15	1050	1352
5/9/05 14:19	1.24	6.24	1050	1353
5/9/05 14:20	1.22	6.32	1049	1353
5/9/05 14:21	1.14	6.43	1049	1353
5/9/05 14:22	1.29	6.06	1050	1353
5/9/05 14:23	1.20	5.98	1050	1352
5/9/05 14:24	1.26	5.94	1050	1352
5/9/05 14:25	1.25	5.85	1050	1353
5/9/05 14:26	1.20	5.75	1049	1353
5/9/05 14:27	1.27	5.59	1049	1353
5/9/05 14:28	1.23	5.65	1051	1353
5/9/05 14:29	1.17	3.91	1051	1353
5/9/05 14:30	1.18	3.78	1051	1353
5/9/05 14:31	1.44	3.66	1051	1353
5/9/05 14:32	1.21	3.74	1051	1353
5/9/05 14:33	1.29	3.94	1051	1353
5/9/05 14:34	1.38	3.91	1051	1353
5/9/05 14:35	1.27	4.02	1051	1353
5/9/05 14:36	1.37	3.98	1051	1353
5/9/05 14:37	1.26	3.99	1051	1353
5/9/05 14:38	1.42	4.03	1051	1353
5/9/05 14:39	1.36	4.08	1051	1353
5/9/05 14:40	1.40	4.18	1054	1354
5/9/05 14:41	1.33	4.17	1054	1354
5/9/05 14:42	1.28	3.96	1054	1355
5/9/05 14:43	1.27	4.00	1054	1354
5/9/05 14:44	1.33	4.05	1054	1354
5/9/05 14:45	1.39	3.91	1053	1354
5/9/05 14:46	1.45	3.97	1054	1354
5/9/05 14:47	1.56	4.07	1054	1354
5/9/05 14:48	1.74	4.07	1054	1354
5/9/05 14:49	1.76	3.74	1054	1355
5/9/05 14:50	1.93	3.70	1053	1354
5/9/05 14:51	1.90	3.97	1054	1354
5/9/05 14:52	1.91	3.79	1057	1357
5/9/05 14:53	1.91	3.61	1057	1357
5/9/05 14:54	1.94	3.78	1057	1357
5/9/05 14:55	1.84	3.89	1057	1357
5/9/05 14:56	1.86	3.66	1057	1357
5/9/05 14:57	1.96	3.89	1057	1357
5/9/05 14:58	1.93	3.75	1057	1357
5/9/05 14:59	2.02	3.70	1057	1357
5/9/05 15:00	1.96	3.79	1057	1357
5/9/05 15:01	2.04	3.55	1057	1357
5/9/05 15:02	1.94	7.75	1057	1357
5/9/05 15:03	2.01	7.51	1057	1357

Date/Time	Unit A CO ppm	Unit X CO ppm	Btu/scf	Wobbe
5/9/05 18:01	2.01	4.23	1092	1371
5/9/05 18:02	1.88	3.96	1092	1371
5/9/05 18:03	2.01	4.26	1092	1371
5/9/05 18:04	1.86	4.33	1092	1371
5/9/05 18:05	1.88	4.12	1091	1371
5/9/05 18:06	1.93	4.22	1091	1371
5/9/05 18:07	2.02	4.23	1092	1371
5/9/05 18:08	2.03	4.22	1092	1371
5/9/05 18:09	1.97	4.16	1092	1371
5/9/05 18:10	1.97	4.22	1092	1371
5/9/05 18:11	1.94	4.22	1091	1371
5/9/05 18:12	1.93	4.36	1091	1371
5/9/05 18:13	2.01	4.20	1091	1370
5/9/05 18:14	1.95	4.31	1092	1371
5/9/05 18:15	2.06	4.10	1092	1371
5/9/05 18:16	2.09	4.20	1093	1372
5/9/05 18:17	1.78	4.37	1092	1372
5/9/05 18:18	1.91	4.25	1092	1371
5/9/05 18:19	1.95	4.16	1092	1371
5/9/05 18:20	1.95	4.20	1092	1372
5/9/05 18:21	1.94	4.21	1093	1372
5/9/05 18:22	1.95	4.27	1092	1372
5/9/05 18:23	1.86	4.25	1092	1371
5/9/05 18:24	2.00	4.23	1091	1371
5/9/05 18:25	1.99	4.12	1091	1371
5/9/05 18:26	1.93	4.22	1092	1371
5/9/05 18:27	1.92	4.05	1092	1371
5/9/05 18:28	2.05	4.23	1089	1366
5/9/05 18:29	2.01	4.40	1089	1366
5/9/05 18:30	1.96	4.46	1088	1366
5/9/05 18:31	1.94	4.56	1088	1366
5/9/05 18:32	2.24	4.50	1088	1365
5/9/05 18:33	2.04	4.26	1089	1366
5/9/05 18:34	2.14	4.42	1089	1366
5/9/05 18:35	2.30	4.41	1089	1366
5/9/05 18:36	2.00	4.35	1088	1366
5/9/05 18:37	1.98	4.67	1088	1366
5/9/05 18:38	2.09	4.42	1088	1365
5/9/05 18:39	2.08	4.12	1089	1366
5/9/05 18:40	2.10	4.18	1089	1366
5/9/05 18:41	2.12	4.38	1089	1366
5/9/05 18:42	2.06	4.21	1088	1366
5/9/05 18:43	2.01	4.31	1088	1366
5/9/05 18:44	2.17	4.23	1088	1366
5/9/05 18:45	2.17	4.34	1089	1366
5/9/05 18:46	2.31	4.33	1089	1366
5/9/05 18:47	2.36	4.35	1089	1366
5/9/05 18:48	2.17	4.35	1089	1366
5/9/05 18:49	1.99	4.33	1088	1366
5/9/05 18:50	2.43	4.39	1088	1366
5/9/05 18:51	2.09	4.24	1089	1366
5/9/05 18:52	2.29	4.28	1089	1366
5/9/05 18:53	2.25	4.34	1089	1366
5/9/05 18:54	2.39	4.18	1088	1366
5/9/05 18:55	2.24	4.31	1088	1366
5/9/05 18:56	2.18	4.30	1088	1366
5/9/05 18:57	2.06	4.39	1088	1366

Date/Time	Unit A CO ppm	Unit X CO ppm	Btu/scf	Wobbe
5/9/05 11:04	1.48	14.07	1043	1350
5/9/05 11:05	1.43	12.70	1043	1350
5/9/05 11:06	1.54	12.57	1043	1350
5/9/05 11:07	1.59	12.51	1043	1350
5/9/05 11:08	1.45	12.14	1043	1350
5/9/05 11:09	1.30	12.29	1043	1350
5/9/05 11:10	1.35	11.48	1043	1350
5/9/05 11:11	1.33	11.26	1043	1350
5/9/05 11:12	1.37	11.13	1043	1350
5/9/05 11:13	1.37	10.67	1043	1350
5/9/05 11:14	1.46	10.25	1043	1350
5/9/05 11:15	1.38	9.84	1043	1350
5/9/05 11:16	1.51	9.16	1076	1362
5/9/05 11:17	1.56	9.16	1075	1362
5/9/05 11:18	1.40	9.68	1075	1362
5/9/05 11:19	1.46	9.31	1076	1362
5/9/05 11:20	1.56	9.12	1076	1362
5/9/05 11:21	1.52	7.81	1076	1362
5/9/05 11:22	1.33	7.22	1076	1362
5/9/05 11:23	1.44	6.47	1075	1362
5/9/05 11:24	1.50	6.42	1075	1362
5/9/05 11:25	1.52	5.88	1076	1362
5/9/05 11:26	1.44	5.67	1076	1362
5/9/05 11:27	1.38	5.42	1076	1362
5/9/05 11:28	1.67	4.89	1088	1368
5/9/05 11:29	1.53	5.16	1088	1368
5/9/05 11:30	1.59	4.69	1087	1368
5/9/05 11:31	1.41	4.80	1088	1368
5/9/05 11:32	1.38	4.70	1088	1368
5/9/05 11:33	1.33	4.61	1088	1368
5/9/05 11:34	1.41	4.80	1088	1368
5/9/05 11:35	1.46	4.55	1087	1368
5/9/05 11:36	1.50	4.62	1087	1368
5/9/05 11:37	1.42	4.71	1088	1368
5/9/05 11:38	1.55	4.59	1088	1368
5/9/05 11:39	1.59	4.58	1088	1368
5/9/05 11:40	1.49	4.59	1090	1368
5/9/05 11:41	1.63	4.58	1090	1368
5/9/05 11:42	1.43	4.50	1090	1368
5/9/05 11:43	1.51	4.90	1090	1369
5/9/05 11:44	1.42	4.63	1090	1369
5/9/05 11:45	1.40	4.59	1090	1369
5/9/05 11:46	1.55	4.61	1089	1368
5/9/05 11:47	1.58	4.47	1089	1368
5/9/05 11:48	1.52	4.73	1090	1369
5/9/05 11:49	1.37	4.36	1090	1369
5/9/05 11:50	1.32	4.59	1090	1369
5/9/05 11:51	1.37	4.55	1090	1368
5/9/05 11:52	1.55	4.51	1089	1368
5/9/05 11:53	1.48	4.40	1089	1367
5/9/05 11:54	1.38	4.25	1090	1368
5/9/05 11:55	1.33	4.34	1090	1368
5/9/05 11:56	1.32	4.49	1090	1368
5/9/05 11:57	1.48	4.40	1090	1367
5/9/05 11:58	1.44	4.17	1089	1367
5/9/05 11:59	1.47	4.43	1089	1367
5/9/05 12:00	1.33	4.64	1090	1368
5/9/05 12:01	1.37	4.40	1090	1368
5/9/05 12:02	1.49	4.43	1090	1368
5/9/05 12:03	1.53	4.37	1090	1368
5/9/05 12:04	1.52	4.40	1088	1365
5/9/05 12:05	1.60	4.42	1088	1365
5/9/05 12:06	1.52	4.53	1089	1366

Date/Time	Unit A CO ppm	Unit X CO ppm	Btu/scf	Wobbe
5/9/05 15:04	1.82	7.41	1054	1356
5/9/05 15:05	1.86	7.49	1054	1356
5/9/05 15:06	1.92	7.55	1054	1356
5/9/05 15:07	1.91	7.41	1054	1356
5/9/05 15:08	1.86	7.95	1054	1356
5/9/05 15:09	2.01	7.49	1054	1356
5/9/05 15:10	1.89	7.76	1054	1356
5/9/05 15:11	1.85	8.03	1054	1356
5/9/05 15:12	1.92	7.82	1054	1356
5/9/05 15:13	2.07	7.53	1054	1356
5/9/05 15:14	1.88	7.25	1054	1356
5/9/05 15:15	1.91	7.98	1054	1356
5/9/05 15:16	2.01	7.72	1060	1360
5/9/05 15:17	1.94	7.54	1060	1360
5/9/05 15:18	1.84	7.55	1060	1360
5/9/05 15:19	1.97	7.77	1060	1360
5/9/05 15:20	2.02	7.65	1060	1360
5/9/05 15:21	1.91	7.42	1060	1360
5/9/05 15:22	2.04	7.68	1060	1360
5/9/05 15:23	1.92	7.57	1060	1360
5/9/05 15:24	1.90	7.61	1060	1360
5/9/05 15:25	1.95	7.04	1060	1360
5/9/05 15:26	1.79	6.93	1060	1360
5/9/05 15:27	1.86	6.84	1060	1360
5/9/05 15:28	1.99	7.06	1063	1361
5/9/05 15:29	1.90	7.18	1063	1361
5/9/05 15:30	1.97	7.02	1063	1361
5/9/05 15:31	1.78	6.81	1063	1361
5/9/05 15:32	1.89	6.65	1063	1361
5/9/05 15:33	1.92	6.87	1063	1361
5/9/05 15:34	1.97	7.14	1063	1361
5/9/05 15:35	2.09	6.43	1063	1361
5/9/05 15:36	1.74	6.46	1063	1361
5/9/05 15:37	1.97	6.78	1063	1361
5/9/05 15:38	1.99	6.33	1064	1361
5/9/05 15:39	1.77	6.38	1064	1361
5/9/05 15:40	1.93	6.46	1074	1366
5/9/05 15:41	2.02	6.71	1074	1366
5/9/05 15:42	1.96	7.05	1074	1366
5/9/05 15:43	2.02	7.01	1075	1366
5/9/05 15:44	1.89	6.48	1075	1366
5/9/05 15:45	1.84	6.07	1075	1366
5/9/05 15:46	1.98	5.72	1075	1367
5/9/05 15:47	1.93	5.78	1074	1366
5/9/05 15:48	1.80	6.14	1074	1366
5/9/05 15:49	1.90	5.72	1075	1366
5/9/05 15:50	2.17	5.60	1075	1367
5/9/05 15:51	2.05	5.44	1075	1367
5/9/05 15:52	2.19	5.58	1091	1374
5/9/05 15:53	2.23	5.31	1090	1374
5/9/05 15:54	2.07	4.88	1090	1374
5/9/05 15:55	2.17	4.87	1090	1374
5/9/05 15:56	2.16	5.05	1091	1374
5/9/05 15:57	2.17	4.72	1091	1374
5/9/05 15:58	2.38	4.74	1091	1374
5/9/05 15:59	2.36	4.99	1091	1374
5/9/05 16:00	2.43	5.74	1090	1374
5/9/05 16:01	2.49	6.37	1090	1374
5/9/05 16:02	2.61	5.94	1090	1374
5/9/05 16:03	2.68	5.92	1091	1374
5/9/05 16:04	2.57	5.92	1095	1374
5/9/05 16:05	2.78	5.85	1095	1374
5/9/05 16:06	2.51	6.13	1094	1374

Date/Time	Unit A CO ppm	Unit X CO ppm	Btu/scf	Wobbe
5/9/05 19:04	2.28	4.31	1088	1367
5/9/05 19:05	2.12	4.24	1088	1367
5/9/05 19:06	2.04	4.32	1088	1367
5/9/05 19:07	2.17	4.38	1087	1367
5/9/05 19:08	2.16	4.26	1087	1367
5/9/05 19:09	2.24	4.52	1087	1367
5/9/05 19:10	2.12	4.27	1088	1367
5/9/05 19:11	2.12	4.28	1088	1367
5/9/05 19:12	2.23	4.08	1088	1367
5/9/05 19:13	2.07	4.29	1087	1367
5/9/05 19:14	2.33	4.36	1087	1367
5/9/05 19:15	2.22	4.46	1087	1367
5/9/05 19:16	2.13	4.33	1089	1368
5/9/05 19:17	2.25	4.28	1089	1368
5/9/05 19:18	2.06	4.41	1089	1368
5/9/05 19:19	2.11	4.26	1089	1368
5/9/05 19:20	2.24	4.28	1088	1368
5/9/05 19:21	2.13	4.30	1088	1368
5/9/05 19:22	1.98	4.39	1089	1368
5/9/05 19:23	2.08	4.27	1089	1368
5/9/05 19:24	2.04	4.37	1089	1368
5/9/05 19:25	2.06	4.48	1089	1368
5/9/05 19:26	2.12	4.52	1089	1368
5/9/05 19:27	2.17	4.35	1088	1368
5/9/05 19:28	1.91	4.40	1089	1369
5/9/05 19:29	1.84	4.21	1090	1370
5/9/05 19:30	2.00	4.22	1090	1370
5/9/05 19:31	1.89	4.36	1090	1370
5/9/05 19:32	2.13	4.37	1090	1370
5/9/05 19:33	1.97	4.31	1089	1369
5/9/05 19:34	2.05	4.43	1089	1370
5/9/05 19:35	1.87	4.26	1090	1370
5/9/05 19:36	1.93	4.36	1090	1370
5/9/05 19:37	2.04	4.35	1090	1370
5/9/05 19:38	2.15	4.23	1090	1370
5/9/05 19:39	2.05	4.42	1089	1369
5/9/05 19:40	2.13	4.48	1088	1367
5/9/05 19:41	2.07	4.37	1088	1367
5/9/05 19:42	1.85	4.55	1089	1368
5/9/05 19:43	1.98	4.51	1089	1368
5/9/05 19:44	3.57	4.40	1088	1367
5/9/05 19:45	2.60	4.37	1088	1367
5/9/05 19:46	2.80	4.34	1087	1367
5/9/05 19:47	2.50	4.40	1088	1367
5/9/05 19:48	2.61	4.29	1088	1367
5/9/05 19:49	2.36	4.35	1088	1367
5/9/05 19:50	2.40	4.40	1088	1368
5/9/05 19:51	2.46	4.50	1088	1367
5/9/05 19:52	2.55	4.44	1087	1366
5/9/05 19:53	2.40	4.33	1087	1366
5/9/05 19:54	2.45	4.22	1087	1366
5/9/05 19:55	2.50	4.23	1087	1366
5/9/05 19:56	2.55	4.46	1088	1366
5/9/05 19:57	2.48	4.59	1087	1366
5/9/05 19:58	2.49	4.51	1087	1365
5/9/05 19:59	2.45	4.36	1087	1366
5/9/05 20:00	2.29	4.16	1087	1366

Date/Time	Unit A CO ppm	Unit X CO ppm	Btu/scf	Wobbe
5/9/05 12:07	1.36	4.62	1089	1366
5/9/05 12:08	1.41	4.61	1089	1366
5/9/05 12:09	1.49	4.43	1088	1365
5/9/05 12:10	1.40	4.50	1088	1365
5/9/05 12:11	1.42	4.60	1088	1365
5/9/05 12:12	1.43	4.48	1089	1366
5/9/05 12:13	1.67	4.50	1089	1366
5/9/05 12:14	1.41	4.34	1089	1366
5/9/05 12:15	1.50	4.38	1088	1365
5/9/05 12:16	1.30	4.48	1087	1366
5/9/05 12:17	1.37	4.71	1087	1366
5/9/05 12:18	1.35	4.39	1087	1366
5/9/05 12:19	1.33	4.19	1087	1366
5/9/05 12:20	1.47	4.43	1087	1366
5/9/05 12:21	1.38	4.22	1086	1365
5/9/05 12:22	1.38	4.63	1086	1365
5/9/05 12:23	1.45	4.37	1087	1365
5/9/05 12:24	1.31	4.51	1087	1366
5/9/05 12:25	1.50	4.35	1087	1366
5/9/05 12:26	1.26	4.29	1087	1366
5/9/05 12:27	1.36	4.54	1086	1366
5/9/05 12:28	1.39	4.83	1065	1357
5/9/05 12:29	1.36	4.74	1065	1357
5/9/05 12:30	1.41	4.88	1066	1357
5/9/05 12:31	1.49	4.86	1066	1357
5/9/05 12:32	1.38	4.87	1065	1357
5/9/05 12:33	1.37	5.20	1065	1357
5/9/05 12:34	1.40	5.12	1065	1357
5/9/05 12:35	1.30	5.76	1065	1357
5/9/05 12:36	1.35	5.62	1065	1357
5/9/05 12:37	1.33	5.91	1066	1357
5/9/05 12:38	1.42	6.15	1065	1357
5/9/05 12:39	1.37	6.26	1065	1357
5/9/05 12:40	1.36	6.24	1054	1353
5/9/05 12:41	1.44	6.68	1054	1353
5/9/05 12:42	1.25	7.07	1054	1353
5/9/05 12:43	1.34	6.90	1054	1353
5/9/05 12:44	1.34	7.41	1054	1353
5/9/05 12:45	1.54	7.02	1054	1353
5/9/05 12:46	1.43	7.34	1054	1352
5/9/05 12:47	1.43	7.49	1054	1352
5/9/05 12:48	1.40	8.00	1054	1352
5/9/05 12:49	1.42	7.79	1054	1353
5/9/05 12:50	1.40	7.71	1054	1353
5/9/05 12:51	1.23	7.77	1053	1353
5/9/05 12:52	1.25	7.78	1053	1352
5/9/05 12:53	1.28	8.00	1053	1352
5/9/05 12:54	1.44	8.22	1053	1352
5/9/05 12:55	1.66	7.80	1053	1352
5/9/05 12:56	1.24	7.93	1052	1352
5/9/05 12:57	1.35	7.58	1052	1352
5/9/05 12:58	1.35	7.97	1053	1352
5/9/05 12:59	1.40	8.12	1053	1352

Date/Time	Unit A CO ppm	Unit X CO ppm	Btu/scf	Wobbe
5/9/05 16:07	2.40	5.81	1094	1374
5/9/05 16:08	2.49	5.63	1094	1374
5/9/05 16:09	2.64	5.48	1095	1374
5/9/05 16:10	2.55	5.55	1095	1374
5/9/05 16:11	2.32	5.45	1095	1374
5/9/05 16:12	2.41	5.63	1095	1374
5/9/05 16:13	2.34	5.51	1094	1374
5/9/05 16:14	2.28	5.41	1094	1374
5/9/05 16:15	2.30	5.63	1094	1374
5/9/05 16:16	2.07	5.31	1096	1375
5/9/05 16:17	2.09	5.43	1096	1375
5/9/05 16:18	2.16	5.34	1096	1375
5/9/05 16:19	2.03	5.36	1096	1375
5/9/05 16:20	1.96	5.25	1095	1375
5/9/05 16:21	1.76	5.23	1095	1375
5/9/05 16:22	1.88	5.09	1095	1375
5/9/05 16:23	1.75	5.55	1096	1375
5/9/05 16:24	1.73	5.27	1096	1375
5/9/05 16:25	1.64	5.12	1096	1375
5/9/05 16:26	1.62	5.29	1095	1375
5/9/05 16:27	1.52	5.44	1095	1374
5/9/05 16:28	1.48	5.49	1097	1376
5/9/05 16:29	1.51	5.24	1098	1377
5/9/05 16:30	1.37	5.26	1098	1377
5/9/05 16:31	1.57	5.16	1098	1377
5/9/05 16:32	1.53	5.28	1098	1377
5/9/05 16:33	1.56	5.28	1097	1376
5/9/05 16:34	1.48	5.21	1097	1376
5/9/05 16:35	1.50	5.27	1097	1376
5/9/05 16:36	1.44	5.27	1098	1377
5/9/05 16:37	1.57	5.17	1098	1377
5/9/05 16:38	1.43	5.31	1098	1377
5/9/05 16:39	1.49	5.49	1098	1377
5/9/05 16:40	1.38	5.18	1094	1376
5/9/05 16:41	1.41	5.38	1094	1376
5/9/05 16:42	1.55	5.17	1094	1377
5/9/05 16:43	1.41	5.52	1095	1377
5/9/05 16:44	1.50	5.81	1095	1377
5/9/05 16:45	1.48	5.68	1095	1377
5/9/05 16:46	1.46	5.59	1094	1376
5/9/05 16:47	1.48	5.31	1094	1376
5/9/05 16:48	1.48	5.39	1094	1376
5/9/05 16:49	1.41	5.30	1094	1377
5/9/05 16:50	1.48	5.34	1095	1377
5/9/05 16:51	1.36	5.24	1095	1377
5/9/05 16:52	1.52	5.29	1085	1365
5/9/05 16:53	1.46	5.40	1084	1365
5/9/05 16:54	1.48	5.21	1084	1365
5/9/05 16:55	1.44	5.41	1085	1365
5/9/05 16:56	1.36	5.50	1085	1365
5/9/05 16:57	1.54	5.37	1085	1365
5/9/05 16:58	1.42	5.48	1085	1365
5/9/05 16:59	1.47	5.60	1084	1365